

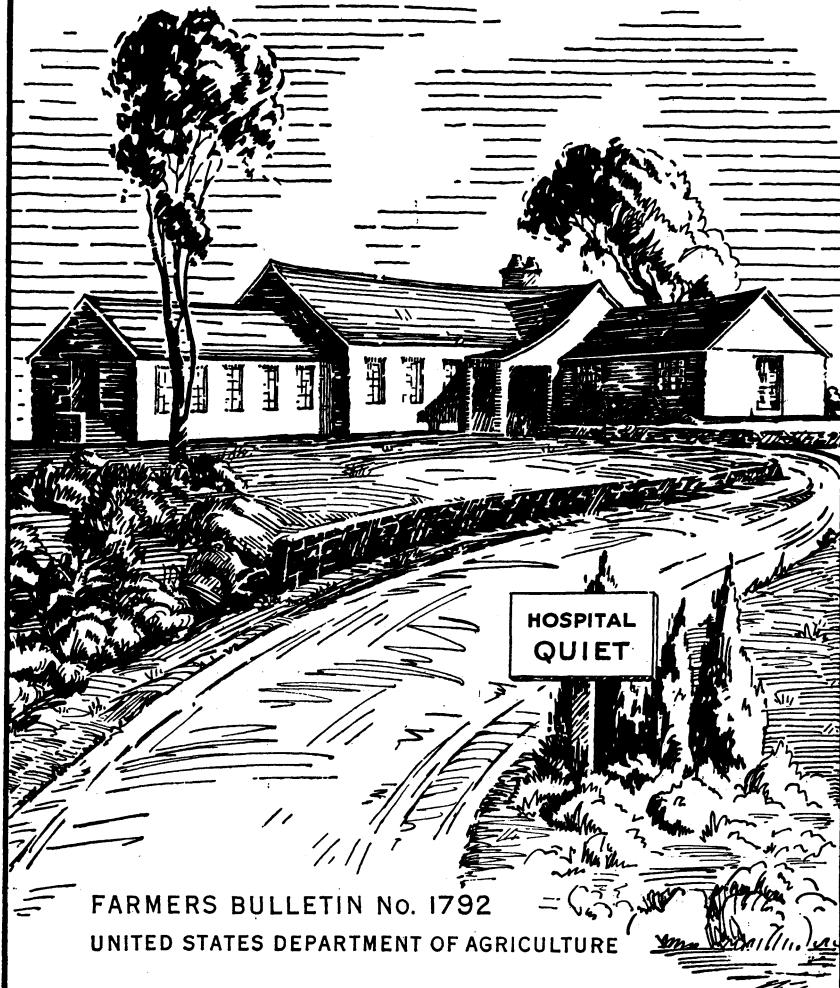
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# Hospitals for Rural Communities



FARMERS BULLETIN NO. 1792  
UNITED STATES DEPARTMENT OF AGRICULTURE

**T**HOUSANDS OF FARM FAMILIES live too far from hospitals for safety. Bed care is needed, and hospital laboratories and equipment are necessary also for the diagnosis and treatment of injuries and diseases, if up-to-date medical service is to be obtained.

Since many country communities need hospitals, building committees, before starting to build, may wish to profit by the experience of communities that have planned, built, and operated hospitals successfully. Many communities that acquire the capital cost of a hospital fail to finance the operating costs. These costs are often burdensome because relief loads may be unexpectedly heavy. Some States have laws that provide financial aid to counties for the hospital care of those who cannot pay. Some cities and counties pay other counties for hospital care. Group hospitalization plans have made it possible for more persons to pay for their own care than was previously possible. A hospital building committee will want to know how much to expect from its State, from its county, from its people.

A good hospital plan is a plan for future as well as present needs. New space, new departments, and new equipment should be considered when the hospital is built, or these additions may be unnecessarily costly later on, or they may interfere with the best uses of the building.

This bulletin supersedes Farmers Bulletin No. 1485, Rural Hospitals. It gives information on hospital needs, size, cost, financing, and plans, based on the experiences of many localities.

# HOSPITALS FOR RURAL COMMUNITIES

By BLANCHE HALBERT

*Collaborator, Bureau of Agricultural Economics, and economic analyst, Farm Security Administration<sup>1</sup>*

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## DO FARM FAMILIES NEED MORE HOSPITALS?

**N**O ONE LIKES to think of the possibility of sickness, and as it usually comes unexpectedly, provision is not often made for it. Sufficient savings are not set aside for it. Either the income is spent in other ways, or there is not enough money to pay for all of the essentials of living. A family may live along for a number of years and expend but a few dollars a year for health; then the cost of sickness may unexpectedly amount to one-fourth or more of the family's yearly income.

It has been estimated that nearly 5 million families each year pay 15 or 20 percent of their annual income for medical care. Many families go through disabling illnesses without the care of a doctor, and many others do not consult a doctor even in fatal illnesses. Each family hopes that it will escape this unpleasant experience with its costly outlay; but in every community—large or small, city or country—there are always some sick people.

## WHY HOSPITALS ARE NECESSARY

In a group of sick people, some will always need skilled medical care, and such care often requires the use of a hospital. Although only about 1 in every 19 persons uses general hospitals each year, in a county of 20,000 persons more than 1,000 will need this type of care in the course of a year. In addition, there are some people in the country who live great distances from a doctor. As a doctor's travel is costly these people usually are cared for better and more cheaply in a hospital, even though their illness does not actually require this type of treatment.

<sup>1</sup> Grateful acknowledgment is made for assistance and information to Michael M. Davis, director of Medical Services, Julius Rosenwald Fund; W. S. Rankin, director Hospital and Orphan Sections, the Duke Endowment; Alden B. Mills, editor, the Modern Hospital; Carl A. Erikson, architect; and the U. S. Public Health Service.

A hospital is not used for bed patients only. It fills other medical needs. During past years new facilities and equipment for the diagnosis and treatment of disease have been considered necessary if good care is to be expected. Progress in medical care calls for new methods, and many old standards are no longer tolerated. Hospitals that have good equipment and laboratories are now also used for patients who need treatment but can live at home.

Many authorities believe that a well-equipped rural hospital will encourage doctors to enter country practice. In many rural districts there are too few doctors to care for all the people adequately. Many of the younger doctors, after having some experience, leave country communities in order to practice in cities because medical equipment and facilities are usually better there, incomes are somewhat higher, and social advantages are greater.

This shortage of doctors in small rural communities has become a serious problem for country people. In a number of States, where from 70 to 85 percent of the people live in the country, there is only 1 doctor for every 1,000 to 1,500 persons. In other States in which only 25 or 30 percent of the people live in rural territory, there is 1 doctor to as few as 500 to 700 persons. Although many authorities believe there are too many doctors for the United States as a whole, most of them agree that there are too few in the small communities to serve these communities and the open country around them.

Even in those States where there are large rural populations the number of doctors has been decreasing. A great many small towns that had one or two doctors a few years ago have none at all at present. As old doctors retire new ones do not come to take up their practice. It is difficult to find out just how many doctors are needed for a normal community, for this depends on the medical equipment at hand, the quality of the doctor's service, how far the families are from the doctor, and the characteristics of the people. But it is generally agreed that a great many rural areas are undersupplied.

The tendency of doctors to concentrate in cities makes it desirable for a country area to employ means of attracting them, and hospitals have been recommended as one of the greatest attractions. In recent years a doctor's training has included the use of laboratories, diagnostic equipment, and other hospital facilities. Physicians with modern training now depend upon such equipment for their success in practice. They need it to do a first-rate job. In 1932, for instance, about two-thirds of the doctors of the country were associated with hospitals. This seems to indicate that doctors want access to hospital facilities to do good medical work.

#### THE PRESENT HOSPITAL SITUATION

Farm families use hospitals owned and operated by county governments, by city governments, by a combination of city and county governments, by voluntary organizations such as churches and fraternal groups, and by proprietary, or profit, groups. City people use county hospitals that are operated for all families—city and country alike—and farm families also use all hospitals, city and county, governmental and nongovernmental. The locations of these hospitals and their accessibility, their charges, their services, the family's capacity to pay, determine where the patient will go for hospital care.

Since roads have become better and transportation has become faster and more comfortable, a farm family can travel a greater distance to a hospital; and it may prefer to go to a large, city hospital some distance away rather than to a small, nearby country hospital. In some localities a family has a choice of a number of hospitals, but in others there are none at all within a feasible distance.

Because of the cost of erecting satisfactory hospitals and of operating them after they have been built and paid for, they are lacking in many areas; but in other areas where wealth and population are concentrated, there is an oversupply. A sensible, adequate hospital program will guard against duplication as well as insufficiency. A hospital for every county is not believed to be good economy, for there may be well-equipped, registered institutions just over the border of the county and within easy reach. In other counties there may be satisfactory city hospitals sufficiently near which are able to meet all needs.

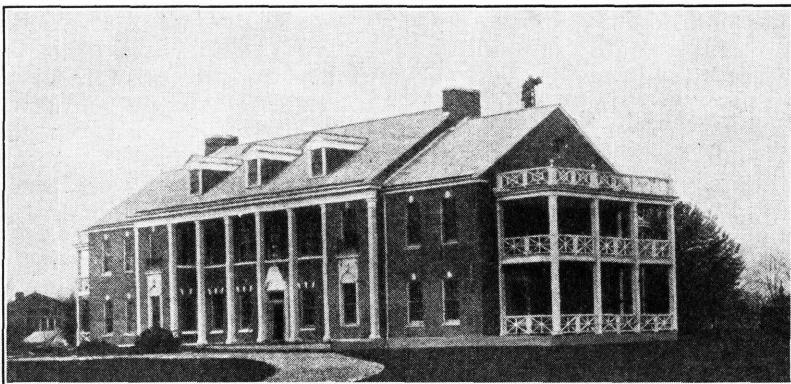
When is a county or a district adequately supplied with hospital service? To determine this, two questions must be answered. (1) How far can patients safely travel to hospitals? Some authorities believe 40 or 50 miles is not too far for most cases if roads are good and ambulance service is satisfactory. Other authorities recommend a shorter distance. (2) How many hospital beds are needed for each 1,000 population? The answer to this question depends upon the doctor's methods of care and upon the habits of the people—whether they are accustomed to the use of hospitals—for among many there is still a fear of the hospital and a misunderstanding of its purpose. Two beds for each 1,000 persons has been recommended as a minimum for rural sections. One bed for each 1,000 is suggested for those areas where the people are unaccustomed to hospital use, but with plans for increasing this number to 2 or more beds per 1,000 at a later date (p. 19).

The need for new hospitals is based on the number of hospital beds already provided for the population in a particular district and the distance that must be traveled to reach a hospital. A study of the present situation shows too many hospitals in some districts and too few in others. The governmental general hospitals—those operated by county, city, and a city-county arrangement—numbered only 448 in 1935, and had a bed capacity approximating 76,000. If each of these 448 hospitals were located in a different county, only a small portion of the 3,073 counties would have governmental general hospitals.

In 1934 only about 1,700 of the 3,073 counties had any general hospital—operated by governmental, voluntary, or profit agencies, according to a study made by Alden B. Mills, managing editor of *The Modern Hospital*, and Patsy Mills, in cooperation with Michael M. Davis, of the Julius Rosenwald Fund. This means that 1,300 counties had no hospitals. The families in these counties may have no hospital facilities within a safe distance, or they may have a good hospital located just over the border of the county. But by allowing 2 beds per 1,000 population, and a distance of 50 miles from the hospital center, the study showed a need for 22,000 new hospital beds for the entire country in 1934. This hospital need according to

the Mills study is greatest in the South, where more than 1,000,000 persons living in 8 States had less than 1 hospital bed for every 2,000 persons.

This study indicates hospital needs in a general way, but it is necessary, as the American Medical Association suggests, for each community to study its own situation before it builds a hospital, for there may be institutions that can be enlarged, or perhaps other arrangements can be made. Before a community builds a new hospital or remodels an old one, it should decide upon the needed number of beds, and the departments and services to be included (fig. 1). Transportation is not comparable in all sections, and although some allowance was made in the survey for mountainous sections, it is difficult to reach a hospital 50 miles away if many of the miles are "horseback miles", as they still are in some of the southern Appalachian Highlands.



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FIGURE 1.—Rutherford Hospital at Murfreesboro, Tenn., has an attractive exterior and a most practical plan. Eleven of the 50 beds are for children and 6 are bassinets. It has a well-planned out-patient department, a laboratory, an X-ray room, and a drug room. In the wing at the rear of the building are the 2 operating rooms, the maternity rooms, and many of the services.

#### WHAT MUST A COMMUNITY CONSIDER BEFORE BUILDING A HOSPITAL?

Before a community decides to build a hospital it should be certain that it needs one. Districts that are oversupplied with hospitals usually face financial difficulties in running them. With good roads and easy travel, a patient may now pass by a small institution for a better equipped, larger one farther away. He may prefer a doctor in the more distant hospital or have other reasons for using it.

Because just this kind of thing has happened during the last few years, many of the small hospitals have been abandoned and larger ones have been made even larger. Patients have gone to these larger and better equipped institutions. There are now more than 100 fewer general hospitals than there were 7 or 8 years ago, but there are many more beds than at that time. The tendency is toward fewer but larger hospitals. Small, poorly equipped plants have been combined with larger ones, or they have been abandoned, and new wings have been added to the larger buildings.

## THE COMMUNITY'S PROBLEM

Every person should have a chance at good hospital care when it is needed. A community wants a good, safe hospital for all its people, one that will meet future as well as present needs. But it does not want to overburden itself financially. Before a community decides to build it will need to consider these problems:

(1) **How large a territory will the hospital serve?** The size of the territory to be served by the hospital will depend upon the existing hospitals, how well equipped these hospitals are, and their distance from the people. The new hospital may serve a single county, or it may serve parts of several counties if legislation permits. As 50 miles is considered a maximum distance, if there are good roads, between the hospital and the families, the population within this 50-mile territory would supposedly use the hospital. If well-equipped, satisfactory hospitals are already operating and are located near enough to serve the locality, a new hospital may not be necessary.

(2) **How many people will use the hospital?** It is important to know the number of people that will probably use the hospital, for this decides its size. To overbuild means the costly overhead of a large, unused plant, and to underbuild means later additions that may be unusually expensive if not planned for in the original building. There will always be some families in the district who will go to other institutions; and, on the other hand, there may be some, perhaps far away, who will come to the new hospital, if it is a good one. The number of people to be served will also affect the operating cost, for if the hospital is only one-fourth filled, the overhead cost will be high.

(3) **Why may too small a hospital fail?** A small hospital will not cost as much as a larger one, but a very small hospital may not be able to afford the necessary equipment for good care, for there will be few patients in it and the cost per bed will be high. Under such conditions doctors may not be willing to use it, and patients may go elsewhere. Such a hospital sometimes becomes an economic failure and a poor institution. On the other hand, under the right conditions a small hospital can be made a very good hospital.

(4) **What if the population is scattered?** Suppose the territory is thinly populated, and farms are so far apart that there are few people in the 50-mile radius. In such a case perhaps only three or four beds would be occupied at a time. This would hardly warrant a complete hospital with its expensive equipment. But these people need care. Usually a small medical center with six or eight beds, with an arrangement with larger distant hospitals for the use of expensive equipment and services is a possible way out (p. 40).

(5) **Is the population increasing or decreasing?** Are people moving from the locality, or are they moving into it? Hospitals should be built for the future. Although it is difficult to know just when people will move from a place and where they will go, some consideration should be given to this problem of population movement.

(6) **What are the habits of the people?** If families are not accustomed to hospitals, the institution will not be used as much as in those communities where families are in the habit of using this kind of medical care.

(7) **How is the building to be financed, and who is to pay its operating costs?** A definite idea of the financing of the hospital, the amount of money necessary, and the approximate cost of its operation and how this is to be paid, are items of information to be ascertained before building. Many communities can easily raise their capital costs but fail to meet the operating costs. The amount of county or city funds, the amount of private funds, the approximate number of pay patients and the number of free patients, the State aid to be expected for free patients—all should be considered in advance. For if there is not enough money to keep up the hospital and it starts to run down in its equipment and services, it may become a hazard instead of an asset to the community and an unsafe health service.

(8) **Should existing hospitals be enlarged?** There may be a hospital nearby that could well accommodate the people if an additional wing were added. This way of providing hospital care is sometimes better and cheaper than building a new institution, particularly if there is not enough money to equip it well.

(9) **What is the community's attitude?** Is the community interested in this social enterprise? Are the people behind it? The public should believe in the hospital as an indispensable health facility. This usually helps to make it successful.

The American Medical Association, which has suggested a number of principles for the establishment of hospitals, believes that only the needs of a community should determine the building of new hospitals. This association says:

\* \* \* Avoid building to sell real estate; to create jobs; to beautify the town; to glorify a certain person, church, lodge, or other group; to excel or to spite a rival group; to get political preferment; or merely to produce a market for certain products; or to get a hand in Government funds.

#### STATE LAWS THAT AFFECT HOSPITALS AND HOSPITAL CARE

It is necessary to become familiar with State legislation concerning the establishment of hospitals and the amount of money that can be expected to help pay for the care of indigent patients before deciding to build.

Before a hospital can be established in a county or a city, the State in which the county or city is located must have legislation that permits the establishment of such an institution. This enabling legislation has been passed by practically all of the 48 States. Hospitals are usually organized under general laws, or a special act of the legislature, or under a charter provided for through a State law.

In certain States, counties may not erect and maintain medical and surgical hospitals, but they may appropriate money for the support of a hospital that is doing charitable work for the residents of that county. In some States a township government is not allowed to erect and operate a hospital.

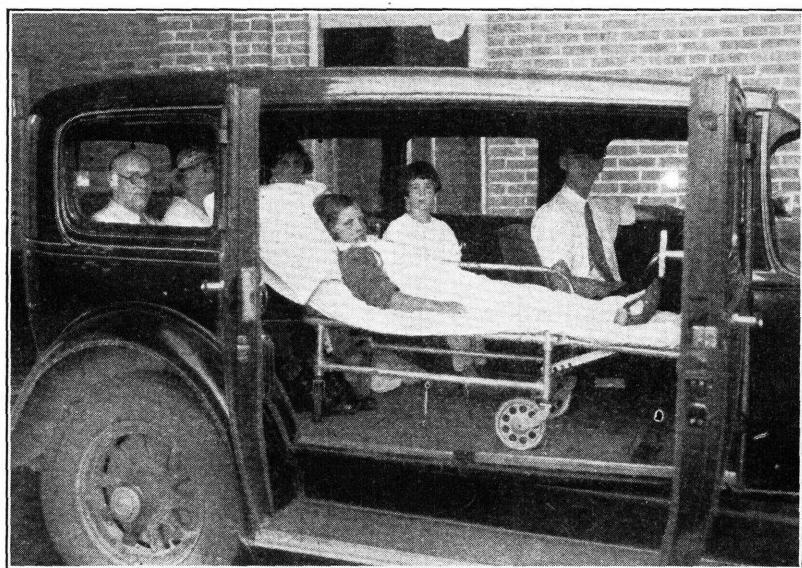
Most States have tax-exemption laws that relieve from taxation all hospitals that give considerable free care.

#### STATE AID FOR PATIENTS UNABLE TO PAY

A number of States have laws that provide for State financial help for those patients who cannot pay their hospital bills. In some States this aid is given directly to the hospital. In others, it is

given to the county and is based on the amount of free care that the county must have for its people. Pennsylvania was one of the first States to help in the financial care of patients. This State now makes an annual appropriation to hospitals that qualify for State aid—those hospitals which must care for patients who are unable to pay their bills. The amount appropriated is according to the amount of free work, and is based on \$3 per patient per day.

A law has been passed in Connecticut that provides for sums of money to be given directly to hospitals. Illinois has no specific law for hospital care, but the Illinois Emergency Relief Commission has been paying hospitals at the rate of \$3.75 a day for the care of the indigent sick. This is an emergency and not a permanent provision.



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FIGURE 2.—One of the 20 ambulances operated by the State University Hospital of Iowa to transport county patients from all parts of the State.

Iowa has a somewhat different system for the care of indigent patients (fig. 2). In that State this type of care centers around the University Hospital, and patients are brought from all of the 99 counties to this hospital for treatment. Twenty ambulances are operated for this purpose. Each county is allowed a quota, and shares in the hospital service according to its population. A county is informed in advance of the number of patients it may send during the year. If the quota is filled or the hospital has no space, the law directs that the county board of supervisors provide care in some other hospital at county expense. In the year 1933-34 more than 14,000 patients were treated. The general hospital has 700 beds, with 200 additional beds in the children's hospital. The cost of care, which is approximately \$3.60 per patient per day, is not charged back to the county from which the patient comes but is provided by the State. Traveling expenses of patients are also paid by the State when necessary. A few other States give a similar type of service.

Mississippi passed a law in 1936 which allows a maximum of \$2.50 per day for the hospital care of patients who are unable to pay. All hospitals in the State may apply for this aid; but before aid is granted, the hospital must meet the requirements of the State Hospital Commission.

#### AUTOMOBILE-ACCIDENT LEGISLATION

A new way of life has brought about a new type of legislation passed by a few States. Hospitals during the last few years have been compelled to care for thousands of automobile-accident cases. Many of these patients have been unable to pay their hospital bills, and as some of these accidents occur outside the district in which the patients reside, they unfairly burden the hospitals in other counties. As these accidents have become a financial hardship to many small, struggling hospitals, a few States have recently passed laws that provide certain sums for the payment, or the part payment, of such hospital care.

#### HOW MUCH DOES IT COST TO BUILD AND OPERATE A HOSPITAL?

Before a community decides to erect a hospital, the building committee should have as much information on the costs of hospitals similar to the one it wants to build as can be obtained. Too often a community underestimates the amount necessary to put up a satisfactory building, and still more often it underestimates the cost of maintaining and operating the plant after the capital investment has been obtained. Usually it is easier to provide the capital cost, which is a definite sum, than the operating cost, which varies from year to year and will go on indefinitely.

#### CAPITAL COSTS

The amount invested in hospitals in 1930 was more than 3 billion dollars, but even with this large expenditure the general public is appreciating more and more the need for adequate hospital care for all the people.

Hospital costs differ somewhat in different sections of the country, for costs of labor and material differ. For this reason the costs obtained from other hospitals will not definitely apply to any new enterprise, but such information will indicate in a general way the "cost expectancy" and indicate an approximate amount for the various items.

Two methods are commonly used in estimating structure cost. One is actual cubic-foot costs either with or without equipment. The other is the estimated cost per bed, which is the cost of the plant and its fixed equipment, divided by the number of beds. If a large amount of expensive equipment is used it will obviously increase the cost per bed.

This bed cost will depend upon the hospital's functions. For instance, an out-patient department would add to the bed cost. The Committee on the Costs of Medical Care, which was organized in 1928 to study health problems, computed the average investment per bed for 221 county general hospitals to be \$3,500, in 1928. Some of these hospitals may have been built during high-cost periods, for many

hospitals serving rural areas have been built at a somewhat lower cost (fig. 3).

The capital investment of a hospital goes into the land, the building, and the equipment. In country districts, land usually can be bought at comparatively low cost. The economy of the plan, the kind of materials used for building, the labor cost, and the amount of equipment considered necessary, are the chief cost considerations of the structure. One analysis of 45 general hospitals located in all parts of the country showed this cost distribution: Land, 10 percent; building, 75 percent; equipment, 15 percent. It is to be expected that these costs would differ somewhat as local building conditions differ; but another study which made this cost distribution for 10 hospitals



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FIGURE 3.—The Dyess Colony 23-bed hospital at Dyess, Ark., was built by the Works Progress Administration for approximately \$24,000. It has a well-equipped outpatient department.

shows this close similarity to the first study: Land, 11 percent; building, 72 percent; equipment, 17 percent.

A community cannot determine the amount of the capital investment necessary until it decides upon the size of the hospital, what functions it is to carry on, and the equipment for these functions. These will vary according to the accessibility of the local population to well-equipped hospital services in nearby areas. A duplication of equipment should be avoided, for it is costly and unnecessary.

The following examples of hospital costs show some similarity in hospitals that are comparable in size:

Headlee Hospital at Odessa, Tex., which was built during the last 2 or 3 years, is a 9-bed, one-story, frame structure which cost \$9,500. The building and fixed equipment cost \$9,000; the land \$500. This is a bed cost of \$1,000, excluding the cost of land and movable equipment.

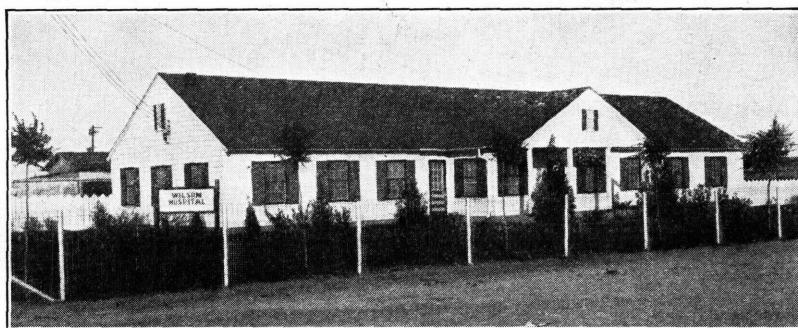
Another small hospital, the Irish Hospital at Forest City, Iowa, built about the same period, is a 12-bed, brick structure which serves a small rural community. It cost \$18,250, excluding the cost of equipment and land, or about \$1,500 per bed. Much of the labor was done on the basis of 50-percent cash and 50-percent credit on bills due the hospital. This hospital is of brick. Climatic conditions usually make a small difference in construction costs.

The Wilson Hospital at Wink, Tex., is a 9-bed building which cost but \$6,700 (fig. 4).

Rutherford Hospital at Murfreesboro, Tenn. (fig. 1), a 44-bed, brick building, cost \$184,019. Of this amount, the building cost \$121,779; the equipment, \$35,633; the land, \$10,000. The cost per bed, excluding the cost of land and equipment, was \$2,768.

Berkeley County Hospital at Moncks Corner, S. C., a recently built, 50-bed, fireproof structure, cost \$124,637—the building, \$104,637; equipment, \$18,000; and the land, \$2,000. The cost per bed, excluding the cost of equipment and land, was \$2,092.

The Duke Endowment, which assists in financing the operation of certain hospitals in the Carolinas, has computed the costs of 10 general hospitals built about 1932, which are representative of the entire number of new hospitals assisted by the endowment. These 10 plants represent an average investment of \$136,700 per hospital. The average bed distribution is 46 percent in wards, 18 percent in rooms of two beds, and 36 percent in single rooms. In computing the



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FIGURE 4.—The Wilson Hospital at Wink, Tex. This is a simply planned, inexpensive hospital that serves a small community.

cost per bed, bassinets are not counted as beds. The cost of nurses' homes is not included. All the plants, with one exception, are of fire-resistive construction.

Tables 1 and 2 give costs per bed and per cubic foot. These costs are useful in making estimates for future hospital building. The Duke Endowment, which compiled these tables, calls attention to the fact that, excluding the Moore County Hospital, which is much more expensive than the others, the cost per bed is \$2,093.63, and cubic-foot cost is reduced to 38 cents.

#### OPERATING COSTS

Hospital operating costs are always high, as equipment uses are costly and medical service is expensive. When new hospitals are to be built, the probable cost of operation should be determined in advance insofar as possible, as well as methods of meeting these operating costs. Balancing the hospital budget often is a matter of unusual concern, for the number of free patients varies from year to year. A hospital's relief load is difficult to estimate as illness requiring hospital care usually is unexpected.

TABLE 1.—*The bed capacity, cubic content, cubic-foot cost, and floor area of 10 hospitals in North Carolina and South Carolina<sup>1</sup>*

Hospital and location	Beds				Cubic content		Cubic-foot cost <sup>1</sup>	Floor area <sup>1</sup>
	Total	Ward	2-bed	Single	Total	Per bed		
	Number	Number	Number	Number	Cubic feet	feet	Cents	Square feet
Grace, Banner Elk, N. C.	56	19	16	21	270,266	4,826	26.0	22,040
Conway, Conway, S. C.	31	21	—	10	151,500	4,887	38.6	13,043
Lee County, Sanford, N. C.	50	22	10	18	247,068	4,941	39.4	17,331
Berkeley County, Moncks Corner, S. C.	50	25	18	7	414,000	4,822	25.3	24,112
Marlboro County, Bennettsville, S. C.	32	10	12	10	174,500	5,453	42.2	15,360
Biltmore, Biltmore, N. C.	52	26	—	26	286,500	5,510	42.6	17,100
Grace, Morganton, N. C.	49	28	—	21	228,447	4,662	50.7	21,524
Haywood County, Waynesville, N. C.	38	8	8	22	213,700	5,624	43.2	21,810
City Memorial, Thomasville, N. C.	31	16	6	9	156,300	5,042	51.0	14,700
Moore County, Pinehurst, N. C.	35	20	6	9	275,000	7,857	62.8	19,859
Average	42	19	8	15	241,728	5,700	40.8	18,688

<sup>1</sup> Of building only; equipment and site costs excluded.

Source: The Small General Hospital. The Duke Endowment, Bull. 3: 98. 1932.

TABLE 2.—*The cost per bed of 10 hospitals in North Carolina and South Carolina*

Hospital and location	Total cost	Cost of building						Equipment	Hospital site
		Total	Structure	Plumb-ing	Heat-ing	Elec-tric	Ele-vator		
Grace, Banner Elk, N. C.	\$1,700.94	\$1,256.30	\$858.77	\$116.23	\$139.86	\$99.98	\$41.46	\$330.36	\$114.28
Conway, Conway, S. C.	2,903.23	1,884.44	1,301.83	206.76	148.39	116.82	110.64	512.05	506.74
Lee County, Sanford, N. C.	2,532.76	1,949.30	1,410.17	215.09	163.56	100.72	59.76	403.46	180.00
Berkeley County, Moncks Corner, S. C.	2,492.75	2,092.75	1,671.55	211.20	130.00	80.00	—	360.00	40.00
Marlboro County, Bennettsville, S. C.	3,125.00	2,300.81	1,731.40	199.09	134.38	150.00	85.94	546.61	277.58
Biltmore, Biltmore, N. C.	3,783.16	2,347.84	1,684.38	211.54	163.46	144.23	144.23	666.09	769.23
Grace, Morganton, N. C.	3,466.24	2,363.82	1,765.28	183.09	159.33	181.89	74.23	565.36	537.06
Haywood County, Waynesville, N. C.	3,124.37	2,429.53	1,943.93	71.05	220.28	117.72	76.55	424.19	270.65
City Memorial, Thomasville, N. C.	3,393.80	2,570.47	1,678.63	338.71	232.26	172.48	148.39	599.32	224.01
Moore County, Pinehurst, N. C.	6,856.92	4,935.38	3,461.58	597.87	469.63	240.59	165.71	1,325.67	595.87
Average	3,224.12	2,328.21	1,695.96	223.35	188.03	136.11	84.76	550.65	345.26

Source: The Small General Hospital. The Duke Endowment, Bull. 3: 98. 1932.

Obviously the operating cost of a hospital depends upon its functions, size, and use. A unit of cost commonly used is the patient-day, which is the total operating expenses of a period divided by the total number of days of hospital bed care. The Committee on the Costs of Medical Care believes the cost per patient-day will vary with the following:

1. Whether acute or chronically ill patients are accepted (a factor which influences the total personnel and the amount and kinds of supplies required).
2. The size of the institution (which influences the opportunity for savings through large-scale operations).
3. The degree of utilization (both of beds and scientific apparatus and equipment).
4. The complexity of services offered (such as X-ray and laboratory).
5. The maintenance of an out-patient department (the patients of which do not utilize hospital beds).

6. The use of the hospital for teaching purposes (training of nurses or undergraduate or graduate physicians).

7. The conduct of medical research.

8. The size of community (which influences the prices which must be paid for personal service and commodities).

9. The efficiency of management (which affects the volume of service rendered for a given expenditure). (The Costs of Medical Care, Committee on the Cost of Medical Care. Pub. 27; p. 339.)

The estimated cost per patient-day of all governmental general hospitals was \$3.25 for 1930. The Duke Endowment computed operating costs for the hospitals that it has assisted as \$3.08 per patient-day in 1934.

The operating cost that must be raised by a community will depend upon the number of free patients in the territory, whether or not the hospital accommodates pay and part-pay patients, and the amounts to be expected from them. To estimate the operating costs over a period of years, a sum for the unexpected poor—the "new poor"—should be included, for during the depression this problem created great financial stress.

The American Hospital Association and the American Medical Association made a study of 309 governmental general hospitals in 1934. They discovered that a large majority of these hospitals—more than 88 percent of the 298 which responded—were caring for part-pay and full-pay patients in addition to caring for the indigent sick. This practice was more common with small hospitals in small communities than with large ones in large cities. Most of these hospitals that accepted pay patients were in localities where other general hospitals were available. This practice of governmental hospitals in accepting pay patients appears to be rather general.

The operating cost of a hospital depends chiefly on (1) hospital size and the average number of beds occupied, for the lower the occupancy the greater the patient-day cost; (2) the quantity and type of equipment; (3) the departments and services it has, for if an out-patient department is included the cost per patient-day is greater; and (4) economy in management and service.

The Washington County Hospital in Washington, Iowa, the oldest county hospital in the country, serves a county of about 20,000 people. It has 25 beds and accommodates both pay and free patients. Its operating costs for the year 1934-35 totaled \$31,050.54. These operating expenses are classified as follows:

Administrative	\$1, 537. 76
Housekeeping	2, 684. 04
Dietary	4, 890. 26
Nursing service	6, 466. 80
Laboratory	837. 04
X-ray	797. 30
Drugs	1, 156. 92
Surgical supplies	1, 803. 51
Laundry	1, 627. 46
Permanent improvement	5, 331. 58
Plant operation	2, 248. 69
Rubio farm	654. 86
Chickens	216. 92
Nurses' home	767. 40
Anaesthetist (vacation relief)	30. 00
 Total expenses	 31, 050. 54

Permanent improvement and nonoperating expenses	\$5,986.44
Total operating expenses	25,064.10
Total income	17,659.70
Deficit	7,404.40

Its receipts for 1934-35 were—

Amount received on old accounts	\$2,102.40
Amount received on current-year accounts	3,090.20
Advance cash	2,316.73
Discharge cash	9,553.44
Rent from farm	300.00
Rent from old nurses' home	92.00
Rent from lot	7.50
Corn-hog contract receipts	197.43
Total receipts 1934-35	17,659.70
Receipts, 1934	12.49
Total deposits 1934-35 to county treasurer	17,672.19

Its earnings were—

Room	\$12,649.74
Ward	7,208.75
Operating room	1,952.30
Anaesthetics	1,876.00
Maternity room	612.50
Nursery	159.00
X-ray	1,403.50
Laboratory	1,321.18
Nurses' board	669.50
Drugs	495.19
Sundry	426.13
Therapy	28.50
Tolls	1.84
Tetanus antitoxin	31.00
Basal-metabolism rates	75.00
Rent, nurses' home	92.00
Rent, lot	7.50
Rent, farm	300.00
Total earnings	29,309.63

The average cost per patient-day of this hospital was \$5.33. Meals averaged 18 cents each. The hospital admitted 625 patients during 1934, and the number of days of treatment was 4,992. Its daily-patient average was 15.4.

Daily charges for a single room in this hospital range from \$4 to \$5; ward rooms \$3 and \$3.75. The charge for operating rooms ranges from \$5 for minor to \$7.50 for major operations. The fee for the obstetrical room is \$5.

In governmental general hospitals, the average fee rates, according to a study made by the American Hospital and American Medical Associations in 1934, were—

Accommodations	Hospitals in cities with less than 100,000 population	Hospitals in cities or 100,000 or more population
Ward	\$2.92	\$3.24
Semiprivate room	3.72	5.63
Private room	5.19	7.14
Unclassified	3.81	3.48

### THE FINANCING

Where is the money coming from to finance the hospital—to put up the building and operate it?

#### TYPES OF HOSPITALS

All hospitals are controlled by three types of organizations—governmental, voluntary, which include church and charitable organizations, and proprietary or profit groups. The usual methods of financing the capital costs of hospitals are by (1) taxation, (2) voluntary contributions and gifts from individuals and private groups, (3) patients' fees, (4) community-chest drives, and (5) other methods. Each group of hospitals has its own methods.

##### VOLUNTARY HOSPITALS

In 1935 voluntary hospitals had more than 216,500 beds. They operate by far the largest number of hospital beds for general care. In 1935 these groups controlled 54 percent of the beds, the governmental hospitals controlled 35 percent, and the profit hospitals controlled 11 percent. This means that 89 percent of the beds, those of voluntary and governmental groups, are controlled by organizations that expect no profit. Voluntary hospitals usually receive their funds for both capital costs and operating costs from one or more of the following sources: (1) Church and fraternal groups, (2) private gifts and endowments, (3) community-chest drives, (4) patients' fees, and (5) fees paid by counties and cities which have no governmental general hospitals for the care of the indigent.

Many counties and cities that have no governmental hospitals appropriate funds for the county's indigent patients and pay for their care in voluntary hospitals. These fees are frequently too small to pay the actual costs. They vary from \$1 to \$3 per day of patient care. A few States that have laws providing funds for the care of their indigent patients also pay voluntary hospitals for such care.

Very few hospitals profit greatly by endowments. The Committee on the Costs of Medical Care says that only one in five hospitals in 1930 controlled endowment capital amounting to more than \$5,000. Authorities believe that this source of financing should not be looked upon by communities as a way out.

##### GOVERNMENTAL HOSPITALS

The capital cost of governmental hospitals, which control 35 percent of the beds in all general hospitals, is usually financed through taxation. This is done through the issuance of bonds. The interest on these bonds and the principal are paid from annual taxes. Hospital-operating costs are usually obtained through (1) county taxation, or a county-city arrangement, (2) funds from those counties which have no hospitals and pay other counties for the care of their indigent sick, (3) philanthropy, and (4) patients' fees; for it is common practice for governmental hospitals, particularly those in small communities, to admit pay patients, even though other hospitals may be available.

Before a county finally decides to establish a hospital it is well to estimate the amounts that can possibly be expected from the following sources:

- (1) The taxes necessary for capital and operating costs and the degree of burden these taxes are to the community.
- (2) Whether or not pay and part-pay patients will be included, and an approximate amount that might be expected from them.
- (3) The amount that the State will provide, if any.
- (4) The amount other counties will pay to the county for the care of their indigent sick.

In a few instances counties have cooperated with local nonprofit groups in financing hospitals, and some county governments have taken over voluntary hospitals.

#### PROFIT HOSPITALS

Profit hospitals usually obtain their capital and operating costs through business loans and patients' fees.

If a hospital is to endure and give satisfaction, there should be reasonable assurance of its future financing, for good care may depend upon the operating funds. The unexpected burden of large numbers of free patients, which was experienced by many hospitals during the depression, is a serious consideration in planning the financing. Depressions usually multiply the extent of free care, and unless some arrangement is made for these extra relief loads the hospital may not survive.

#### A COUNTY'S ABILITY TO PAY

Some counties cannot afford the tax fund necessary to build and operate a hospital. Even though medical care may be needed, facilities for such medical service sometimes cannot be provided within the county. It is difficult to determine the amount of taxes necessary for hospital care for there is no means of determining how many will need this care. Most authorities agree that the county should pay the cost if possible, and if the burden is too great the State should assist.

In 1929 tax funds met only about 14 percent of the total medical bill, and today there is still need for tax funds for both capital investments and operating costs of hospitals. Regarding this need, the Committee on the Costs of Medical Care stated in 1930:

Medical needs arise, roughly speaking, in proportion to the size of the population, but the ability to pay is in proportion to resources. In many of our states are areas wherein local financial resources do not and cannot meet the cost of satisfactory medical care. Occasionally privately financed "demonstrations" have enabled such places to establish or improve hospital or health services. Only local tax funds, aided by state tax funds, however, are a sufficiently large and stable source of support to enable such areas to obtain a satisfactory medical service. (Medical Care for the American People, Committee on the Costs of Medical Care, Pub. 28; p. 52.)

Authorities believe it advisable for a county to depend on its own territory insofar as possible, for the financing of a hospital. In some counties where population is scattered and per-capita

wealth low, the combining of counties, if legally permissible, may be a solution. If the per-capita wealth of a county is too small to raise the necessary tax funds for medical care, and outside assistance appears to be necessary, the Committee on the Costs of Medical Care makes this recommendation:

A majority of the committee believe that it is wise never to rely on a larger unit when the cost can be borne by a smaller one. The community should not be called upon if the family can carry its own burden. The state should not be called upon if the community can meet the cost. The Federal government should not be asked to contribute if the state can pay its way. Where the smaller unit is economically unable to bear the entire burden, however, the larger unit must be ready to aid. (Medical Care for the American People, Committee on the Costs of Medical Care, Pub. 28; p. 122.)

As the result of a survey of medical facilities in three representative counties made in 1930 by this committee, the conclusion was reached that only in the largest of the three counties, which had a population of 35,000 persons, were there enough people and enough wealth to even approach adequate standards for medical care. The average annual per-capita cost of medical care for these three counties ranged from \$7 to \$13.

If there are few pay patients in an area the majority of hospital cases must necessarily be paid for by the county, or through some other means of public financing. Unfortunately, the need for hospital care in a county and the county's capacity to pay for it are usually out of balance.

#### A FAMILY'S ABILITY TO PAY

Almost every county has some families who cannot afford hospital care. Families with small or even moderately small incomes are rarely ever ready for unexpected expenses as large as the usual hospital bill. Medical care is costly, and is even more costly in the country where doctors must travel long distances. Some doctors charge from 50 cents to \$1 a mile for country calls; long distances make these calls very expensive. In a survey of 860 typical farm families, the average cost of the doctor's call was found to be \$7.60, and 13 percent of the families paid \$15 or more for each call.

More than one-fourth of 161,000 borrowers from 271 loan agencies in 135 cities gave illness as the reason for borrowing. This shows the unexpected financial hardship that sickness brings.

A great many studies show that a large number of farm families, even those with moderately high incomes, are not receiving enough medical care or care that is good enough in quality. There are several reasons for this: (1) Medical care is costly, and progress in medicine has brought about a demand for more and better care than in the past. (2) The cost of living is high; and even though medical care is an essential in the cost of living, housing, food, and clothing are also essentials, and the family budget is inadequate—it does not reach. (3) Buying habits among many families have been such that no budget is set aside for medical care, and less important items have come first. This is probably due to the usual belief that this family will somehow avoid sickness. (4) Illness in most cases is unexpected, and families who operate on a small margin of savings do not or cannot budget for it. (5) The distribution of population

has made good medical care costly in many rural districts, as doctors and many of the families needing care are far apart.

A family with a moderately small income may have enough to pay for a short illness when it occurs, but it rarely has enough for hospital treatment. A taxpayer in a county might not have enough money to pay for his own hospital care; yet he may have been taxed year after year for the operation of a county hospital. The hospital bill that usually follows an illness comes when the little savings, if there were any at all, have been spent. Then too, the hospital bill rarely can wait, for the hospital is hard-pushed also, and it must operate. A common method of payment is the hospital first; then the nurse and the doctor.

The Committee on the Costs of Medical Care made a study in 1930 of three counties which were selected as representative of 10 Southern States (p. 16).

In the first county, where a hospital is located 18 miles from the center of the county, residents with moderately high incomes—the wealthier residents—seemed to have no serious difficulties. But the cost of hospital care was often too great for the poorer patients, and they postponed it beyond a period of safety in their efforts to collect money to pay the bill. Neither the county nor the State in which this county was located provided funds for the indigent sick.

In the second county, where one hospital was about 30 miles distant from the center of the county but a preferable one was 65 miles away, physicians were often compelled to perform major operations in patients' homes.

The third county seemed to have better health facilities.

The committee came to this conclusion with regard to the problem of hospital care:

Whereas physicians and dentists and nurses may be willing or forced to wait for their share of the money which comes into the county only once a year when the chief cash crop is sold, hospitals are unable to maintain plant and personnel in readiness to serve patients unless cash payments are promptly made for services rendered. From the standpoint of the poorer residents of these three counties, hospitalization would appear to be a major financial catastrophe. Illnesses are hospitalized only as a last resort, and surgical operations are postponed as long as possible—frequently with serious consequences. (Surveys of Medical Facilities in Three Representative Counties, Committee on the Costs of Medical Care, Pub. 23; pp. 5-13.)

About half the total number of days of hospital care in most voluntary hospitals are free-patient days, or they represent care given to patients who are unable to pay. The Duke Endowment, which pays \$1 per free-patient day to the hospitals in North Carolina and South Carolina, reported that 56 percent of the hospitals' days of care in 1934 were free-patient days. A voluntary hospital then can expect about half of its care to be free care, or care to be paid for by sources other than patients.

When a rural community sets up a hospital, it will have a better chance of successful financial operation if it makes a generous provision for the free patients to be accommodated, even though the number of these cannot be definitely learned in advance.

Hospital care for people who cannot pay is a problem for all communities—city and country. There are four common ways of providing this care: (1) Through a governmental general hospital

if one is located in the county (this usually is financed by county or city taxes or both), (2) by sending patients to governmental hospitals in other counties or cities outside the county and paying these counties or cities for this care, (3) by a payment by the county to voluntary hospitals for this aid, made in some instances, by the county in a lump sum, but usually paid on the basis of patient-days, and (4) by charitable organizations.

The following newer methods of payment are worthy of consideration.

#### GROUP HOSPITALIZATION

Many patients could, and would prefer to pay all or part of their hospital bills if the sums were small and spread over long periods. Therefore the group-hospitalization plan has advanced rapidly during the last few years. This group plan is the payment of a definite sum of money, usually monthly, to the hospital for care. This care may or may not be needed by the individual or family.

These plans vary with different localities and different hospitals. The purpose is to organize by groups—industrial, civic, professional, or other—so that the group is made up of normal, healthy persons. If individuals outside of group organizations were allowed to participate in this method of payment, those persons who are most frequently ill would probably be the ones to subscribe to the plan, and a hospital could not afford such an arrangement.

The amount of the subscription to the plan varies with the amount of hospital services offered. Usually the cost ranges from \$6 to \$12 per year for each person. It has been estimated that, on an average, a group of employed persons will each require 1 day's hospital care a year.

This group plan of paying for hospital care has spread rapidly, but largely through city areas where organizations make such a plan easily workable. In Elkins, N. C., where the Hugh Chatham Memorial Hospital has been established, the employees of the main industry of the town, together with the hospital management, have formed a mutual-aid association. The 900 members of the association, with their dependents, make up a group of about 2,400 persons. The fee for each member is 40 cents per week. This entitles the members and their dependents to hospital care and a surgeon's fee up to \$375 for each family, in any one year.

Group hospitalization, which neither raises taxes nor heavily burdens the individual, has many advantages: (1) It spreads the cost of medical care; (2) patients who would be compelled to accept charity under the usual plan are able to pay costs; (3) the hospital receives a definite known income; (4) doctors receive a larger portion of their fees than under the usual method, as the common precedence in the payment for medical care is the hospital before the physician. With the hospital paid, the doctor has a better chance of receiving a part or all of his fee.

Voluntary hospital-insurance plans are widespread in England. One association has more than 4,500,000 subscribers. In the groups outside this association, there are more than 5,000,000 members and their dependents. The English and the American objectives are

practically the same—to pool the savings of individuals and spread them over a period, in order to meet the costs of hospital care when it is needed.

#### THE CANADIAN SYSTEM OF MEETING HOSPITAL COSTS

The method used in Canada to meet the cost of hospital care has been highly commended for its success during the last few years. In Saskatchewan, where 76 percent of the 933,000 persons live in rural territory, hospitals were fairly well established in cities 20 years ago, but farm families were without them. In 1916 laws were passed that permitted rural municipalities (rural districts) to join with urban municipalities in building hospitals.

The size of the hospital provided for by these laws is based on 1 bed for every 275 or 300 persons. In each instance, the Minister of Health provides the hospital plan, but the local hospital board of the municipality approves this plan. When the hospital scheme is finally ratified by the necessary majority of persons in the district, debenture bonds are issued, which are usually spread over a period of 15 or 20 years. Interest and principal are met by taxes in the municipalities that take part in the plan. This tax cannot exceed 2 mills on a dollar.

This plan provides inexpensive medical care for both taxpayers and others for, if the municipality so chooses, all patients may have free hospital service or hospital service paid for by the taxes of the municipality. There are 20 of these union hospitals in Saskatchewan. In 17 rural municipalities hospital treatment is paid for by taxes; in 9 others the municipality pays \$2 per day and the patient pays the remainder. All hospitals receive 50 cents for each patient per day from the Province.

The amount of hospital space provided by this Canadian system is based on an estimate of 1 person in every 17 needing hospital care for an average of 13 days for each year. The charge is \$3 per day, and taxes are based accordingly. This arrangement of union hospitalization has the advantage of spreading the cost of building and equipment, and the cost of hospital care, over a large territory. It gives less expensive hospital care to taxpayers as well as to others.

This Union Hospital Act has provided for Saskatchewan much more hospital care for the people in the districts where it operates than was possible by the old method. In 1916, for instance, 1 in every 11 children was born in a government-aided hospital, but in 1933 the proportion had increased to about 1 in every 3 children.

#### HOSPITAL SIZE AND EXPECTED OCCUPANCY

Before arrangements are made for a new, rural hospital, some idea of the necessary size and expected occupancy should be obtained, for size affects the capital cost and occupancy affects the operating cost. To build a hospital that will be only from 15 to 20 percent filled is believed to be uneconomical planning.

Some authorities recommend only 1 bed per 1,000 population for a rural area that is unaccustomed to the use of a hospital, provided the institution is located within a distance of 40 to 50 miles over good roads. Other authorities recommend 2 beds for each 1,000 people,

and more as these people become used to hospital care. Many cities have as many as 5 beds for each 1,000 persons, but in cities greater use is made of hospitals than in the country. Then too, country people often go to city hospitals for their care, and the number of hospital beds provided for 1,000 country people should not be as great as the number for 1,000 city people.

Canadian Provinces recommend 2 to 5 beds per 1,000 persons; and in Saskatchewan, where more than three-fourths of the people live in rural territory, 1 bed for each 275 or 300 persons is recommended. The Duke Endowment suggests 1 bed per 1,000 population where families are not used to hospital care, with an increase to 2 beds as education continues.

If the rural hospital is planned on the basis of 1 bed or even 2 beds for each 1,000 people, hospital planners believe it should be so designed and built that it can be easily increased in size without adding unnecessary cost or interfering with its original plan and design.

Most authorities believe that if a hospital is too small it will have difficulty in meeting its overhead expenditures. For when it is furnished with the necessary laboratory and other equipment for good care, obviously the operating cost becomes high for each patient if there are but a few. Too small a hospital cannot have an adequate medical staff, for there is not enough work to keep it busy. Even 25- and 50-bed institutions must depend upon some medical service from other hospitals. Many authorities believe a 25-bed institution is the minimum size for economical operation. With 1 bed for each 1,000 persons, a population of 25,000 would be required for 25 beds.

W. S. Rankin, director of the Hospital and Orphan Sections of the Duke Endowment, believes that occupancy increases as families become more accustomed to hospitals. He says:

The occupancy of hospitals has been increasing over the last ten years and there are two important factors that explain it other than increase in population. The first factor is that the people of rural communities are becoming hospital-minded. They have had more experience with hospital care. They have learned to appreciate it. They are not afraid of hospitals as they were twenty years ago and they go to hospitals more frequently. The other factor is the distribution of the type of physicians. The old-time country doctor is moving to the little towns and there are fewer country doctors, so that it becomes increasingly necessary for the rural population to go to the village or urban center for treatment. Moreover, the younger type of physicians, those who graduated in the last ten or fifteen years, have been trained in hospital practice and are more or less dependent upon hospital facilities, the equipment of the hospital, and the technical personnel of the hospital, nurses, and technicians; and they refer their patients to hospitals more frequently than the older type of doctor.

If the population is not so scattered that families would be too far from the hospital, several rural localities, if their State legislation permits, can advantageously combine to build and operate a hospital. There are many rural areas in which the families are so far apart that there will not be sufficient population within a 50-mile limit to warrant the building of a 25-bed hospital. In some localities hospitals smaller than that have been successfully operated, but for most such sparsely populated districts medical centers are recommended (p. 40).

Most authorities believe that a few extra beds should be added for emergencies that are likely to come. Some recommend as many as 40 percent extra.

The average occupancy of all general hospitals has been between 55 and 65 percent during the last few years. General hospitals located in large cities always have a higher percentage of occupancy than those in small cities that serve rural people. The American Medical Association reports that in 1934 hospitals in communities with less than 10,000 population had 50-percent occupancy, while larger communities had an occupancy of 62 percent.

The Commonwealth Fund, which has financed and established seven 50-bed general hospitals in rural communities, reports an average daily occupancy of about 23 percent for the first 9 months of 1935.

Occupancy depends not only on the number of patients who use the hospital but also on the length of their stay. In 1935 the average length of stay per patient in all general hospitals was 14 days. But in some rural places where it is difficult for doctors to visit patients because of bad roads or other transportation handicaps, or where homes are small or otherwise unsuited to home care, the length of stay may be longer.

It is possible to get a general idea of the number of days of hospital care that would be required for a territory with 25,000 people. For, with 1 person in each 19 using a general hospital during each year and with 14 days as the average length of stay for general-hospital patients, a 25,000-population territory would require about 18,400 days of care. If half of these days were days of free-patient care, which averaged \$3 per day, the hospital cost of the indigent sick would approximate \$28,000. However, rural territories will differ in respect to the number using hospitals, the length of their stay, the number of indigent sick, and the cost of hospital operation.

The expected occupancy of a hospital is dependent upon the proportion of beds to the population, the health education of the community, and the attending physicians' habits of recommending hospital care.

#### SELECTING THE SITE

Where is the rural hospital to be located, and what type of site is most appropriate for it? The building lot that is selected will affect the comfort and welfare of patients as well as the use of the building. Air and sunshine, adequate space for good use, a pleasant outlook, accessibility, freedom from noises and disagreeable odors, land that permits good planning—all will add to the value of the building and the satisfaction of its occupants. It is not as difficult to obtain hospital sites with practically all the site requirements in the country as it is in cities where land is crowded and costly and where the building restrictions in certain sections may not permit such institutions.

The size of the lot to be selected will obviously depend somewhat on the size of the building that seems necessary, the extent of ground that is obtainable in a desirable locality, and the cost. From 2 to 6 acres is believed to be adequate for most moderately small hospitals—hospitals ranging in size from 30 to 60 beds. Too much of the land should not be covered with buildings—there must be enough space for ventilation and light. The 10 general hospitals in North

Carolina and South Carolina (p. 11), which range in capacity from 31 to 56 beds, are located on lots of from 2 to 5 acres.

Site requirements should be considered before deciding upon a location. Although it may not be possible to find all the desirable requirements in any one site for the amount of money that can be used for the lot, the hospital will be more successful and more desirable for a longer period, if the lot is carefully selected. Hospital buildings can be altered but sites cannot be changed much after the buildings are erected. A number of hospital authorities agree on the following requirements for the hospital building lot:

(1) The hospital should be located on a hard-surfaced road and preferably near the center of the population to be served. It should be accessible to public transportation lines, for the convenience of patients and economy in transporting supplies.

(2) The site should have water, sewerage, electricity, and gas facilities, and these should be adequate to supply the need.

(3) The lay of the land should be such that good drainage is assured.

(4) The lot should be so located that it will not become surrounded by buildings that will keep out air and light, and the hospital should be so placed on the site and so planned that plenty of air and light can enter the building. If objectionable buildings surround the area or are to be expected in the future, the site probably will be undesirable.

(5) Noise, smoke, dust, and odors—commonly known as nuisances—should not be tolerated, for both quiet and pure air affect patients.

Malcolm T. MacEachern, authority on hospital building and hospital use, believes a pleasant environment is very important. He says:

The physical and mental reaction of the patient to his surroundings should be such as will be conducive to his pleasure and comfort. The outlook must not be unnecessarily limited. Undoubtedly, being able to see beautiful scenery is an advantageous factor in the patient's convalescence and recovery.

A number of communities have been given land for hospital use, and these communities usually take what they get. Although this is a good start on financing the project, it may not be wise to accept a site that does not meet most of the requirements.

#### THE PLAN

To plan a hospital means planning for the future—for a long time to come. It means planning for new needs and new uses as well as for present needs.

Size is one of the first considerations in developing the plan. Even with the method of approximating the number of necessary beds by basing it on the population of the territory to be served, the size of the hospital is still undetermined, as it will contain more than beds. The departments to be included and the facilities for these departments will depend upon the quantity and quality of hospital services near at hand. Whatever the hospital plan, it should be flexible enough to allow for alteration to meet future changes in conditions and shifts in population.

## PLANNING ESSENTIALS AND ROOM AREAS

Patients' rooms and the necessary space for servicing these rooms must be provided in every hospital. A laboratory and an X-ray room are believed to be essential in small hospitals for both diagnostic and treatment purposes. Whether there are separate operating rooms for major and minor operations will depend on the nearby hospital facilities and the expected use of these rooms. Most authorities believe that they should be provided even in small hospitals (fig. 1). Should an out-patient department be included? This will depend on the type of service the hospital expects to give to the community. If the hospital is to house the health service of the county, its plan must provide space for public health work; for if the rural hospital is to become the health center, public health offices probably will be located there.

If maternity cases are to be cared for, and most small general hospitals will need to give this service, a nursery is necessary, and many



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FIGURE 5.—The nursery in the hospital at Marshfield, Wis. This hospital, with its clinic, serves a large rural territory around Marshfield.

authorities believe a separate delivery room is of great importance and a matter of safety. About one in every three babies is born in a hospital. With the birth rate for the country decreasing, the space in a new hospital given over to maternity work will depend upon the birth-rate trend and the trend toward hospital care or home care. Medical authorities do not always recommend births in hospitals, but often consider a good home to be better than a poor hospital. The Committee on the Costs of Medical Care says that "children born in small towns and rural areas are apt to be born at home". That additional space is being given over to maternity work in hospitals is shown by the fact that between 1934 and 1935 the number of bassinets in hospitals increased by nearly 1,000 (fig. 5). In the 10 general hospitals located in North Carolina and South Carolina (p. 11) about one-sixth of the beds are bassinets.

The general planning considerations, then, based on the usual functions of a small hospital are: (1) Patients' quarters; (2) diagnostic services, including a laboratory, an X-ray department, a small pharmacy, an out-patient department, if the latter is to be included; (3) functional services, like stairs, corridors, and storage areas; (4) special services, such as diet and service kitchens, utility rooms, and dining rooms; (5) administrative space that provides for the reception of patients, for clinical and administrative records, for the work of the business office, and necessary storage spaces; (6) operating rooms and maternity suite; and (7) public health service work, if this is to be housed in the hospital.

As the care of patients is an essential function in any hospital, various opinions as to the types of rooms and spaces allotted to them should be taken into consideration. Most authorities believe that small hospitals should not have large wards, as the small institution must be flexible, and there are always many times when a large ward cannot be filled. The two-bed and the four-bed ward usually are considered satisfactory.

The Duke Endowment, which has established standards for planning, recommends the following dimensions: Private rooms should be 9 by 15 feet by 9 feet 2 inches high. According to the endowment, the rooms might be reduced further in size, but a smaller room has proved to be uncomfortable for the patients and inconvenient for the nurse and doctor. For the semiprivate room or the two-bed room a size of 12 feet 2 inches by 15 feet by 9 feet 2 inches is recommended, for this allows 836 cubic feet for each patient. Wards should not be larger than four to six beds for small hospitals. The major operating room should never be smaller than 14 by 18 feet with the minor operating room 12 feet by 13 feet 8 inches. If an out-patient department is to be included, this examination and treatment room should preferably be 8 by 10 feet, but 6 by 8 feet will serve the purpose.

Carl A. Erikson, architect for many hospitals, and an authority on hospital space, believes that the small hospital should not be based on the plan of the large one. He emphasizes flexibility, for a two-bed room often must become a private room. He believes that four-bed wards are rarely ever satisfactory in the 15- or 20-bed hospital and that each bed should have 80 square feet of space. The private room should be 10 by 16 feet in order that it may be used for two beds when necessary.

This architect says that one-story buildings are cheaper than two-story buildings, as each floor means a duplication of utility rooms or about 1,600 square feet of extra space. In the one-story building, 900 square feet for the utility room is adequate. In addition, elevator service and stairs are eliminated, with the exception of the basement stairs. According to this authority, it is difficult to justify the three rooms—a main operating room, a room for minor operations, and a birth room—in a hospital which has even 40 beds.

Some of the Canadian Provinces recommend 90 to 100 square feet of floor space for each ward bed, and a space of 13 by 9 feet for private rooms.

The number of single rooms, two-bed rooms, and four-bed wards for a small rural hospital depends largely on the territory to be

served, the types of work the hospital carries on, the character of the population, and the number of full-pay and part-pay patients.

Three of the smallest of the 10 hospitals previously discussed (p. 10) have provided bed arrangements as follows:

The Conway Hospital, a 31-bed institution, has 32 percent of its beds in single rooms and 68 percent in wards. The Marlboro County Hospital, another institution with 32 beds, similar in size to Conway Hospital, has 31 percent of its beds in single rooms, 38 percent in two-bed rooms, and 31 percent in wards. Haywood County Hospital, has 38 beds, with 58 percent in single rooms, 21 percent in two-bed rooms, and 21 percent in wards.

Duke Endowment Bulletin 3, p. 16, suggests a few "don'ts" to be considered in building a new hospital:

Don't consider any type of hospital construction other than fireproof (except for one-story buildings). The patients' safety and economy of maintenance demand the highest type of construction available.

Don't select a site that is unfitted for hospital use, no matter how cheap such a site may be.

Don't use a site that is too small. A site 300 feet square is minimum.

Don't arrange your building program to meet only immediate needs. Have an intelligent plan of expansion worked out.

Don't try to secure too many beds at the expense of service and administration units. A hospital must have adequate service facilities to function properly.

Don't ever select a material or piece of equipment merely because it is cheap. Think in terms of service, long life, and minimum cost of upkeep, and let those considerations determine your selection.

Don't start any hospital program without securing the best professional aid available in the way of consultants and architects. A hospital is a highly specialized type of building and requires the services of people who are especially skilled in this class of work.

Don't choose a contractor merely because he is the low bidder. Construction ability and financial stability should be contributing factors in awarding contracts.

These model hospital floor plans (figs. 6-10), designed for the Duke Endowment, are so arranged that a 25-, 35- or 46-bed hospital can be built. For the 25-bed building, the basement and the first and third floors would be used (figs. 6, 7, and 9). The 35-bed hospital would require these same floors with the extension in the rear as indicated; or, the four floors can be built, with the rooms in the third-floor plan used for nurses' rooms (figs. 6, 7, 8, and 9). For the 46-bed building, the construction of the four floors is necessary.

In some country communities it may be advisable to build hospitals smaller than the minimum-size hospital of 25 beds suggested by many authorities. Some communities cannot afford a large building, nor will their population warrant one. Others may want a small hospital at the beginning that may be enlarged later. Very small hospitals require careful planning, for the cost must be kept down and yet essentials must be included. Carl A. Erikson makes the following statements regarding his designs of small hospitals and those that may be later increased in size (figs. 11 to 15). Regarding the 10-room building he says:

Every non-essential had to be stripped from the building. To do that required a careful analysis of all of the medical procedures, their frequency, and the feasibility of combining two or more of the little used procedures in one room.

A number of many-purpose rooms are shown (figs. 11 and 12). Among the patients' rooms, there are only 2 of such rooms, though obviously, any of the 2-bed rooms may become private by merely removing a bed, and any age, sex,

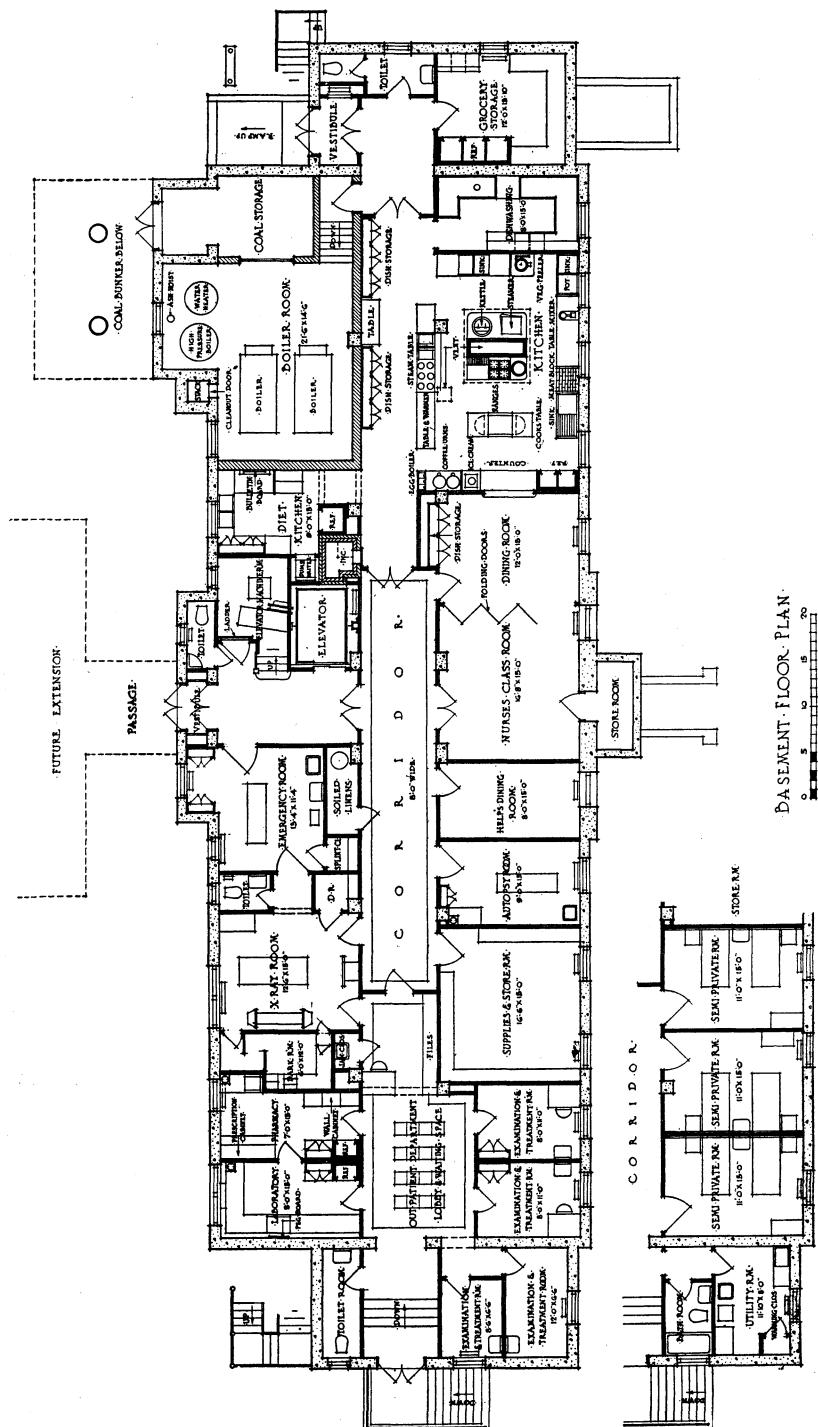


FIGURE 6.—The basement or ground-floor has plenty of light and air.

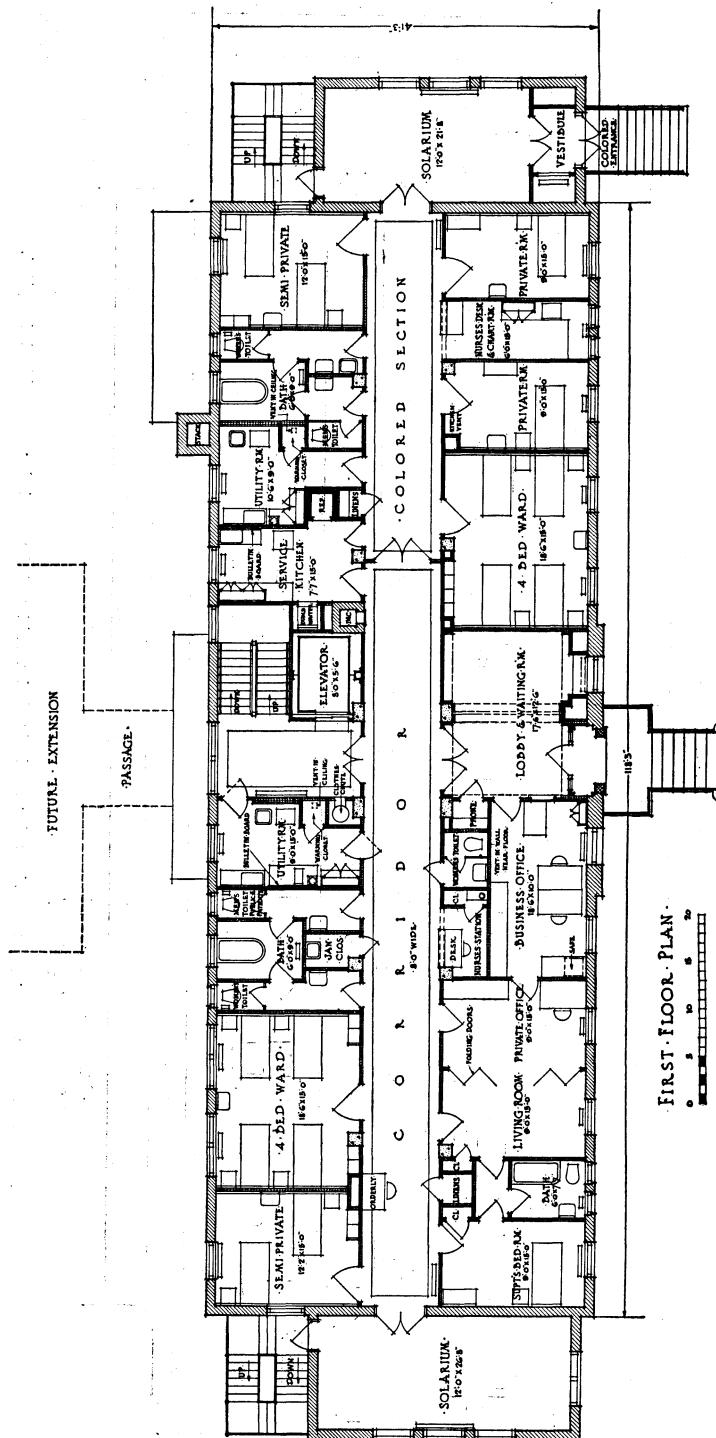


FIGURE 7.—This floor would be used in the 25-, the 35-, and the 46-bed building.

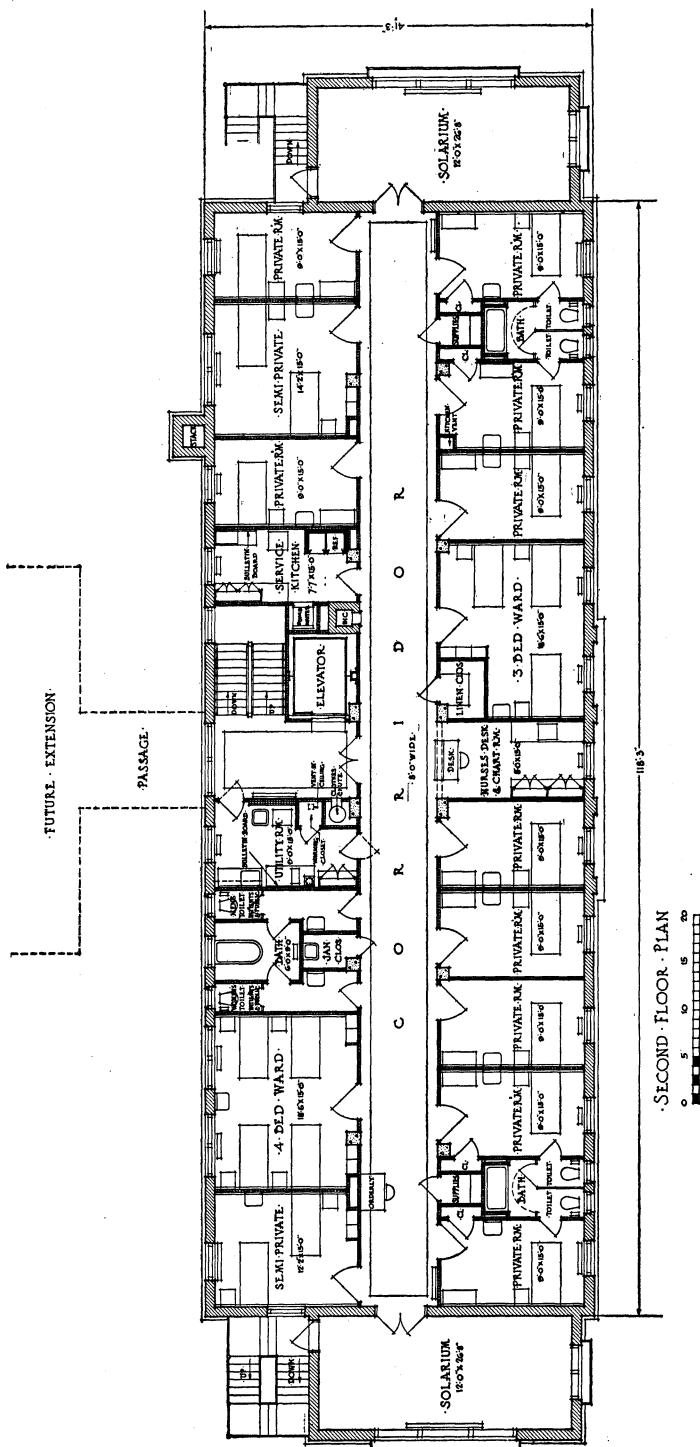


FIGURE 8.—This floor plan provides for 21 beds and would not be used for the 25-bed hospital.

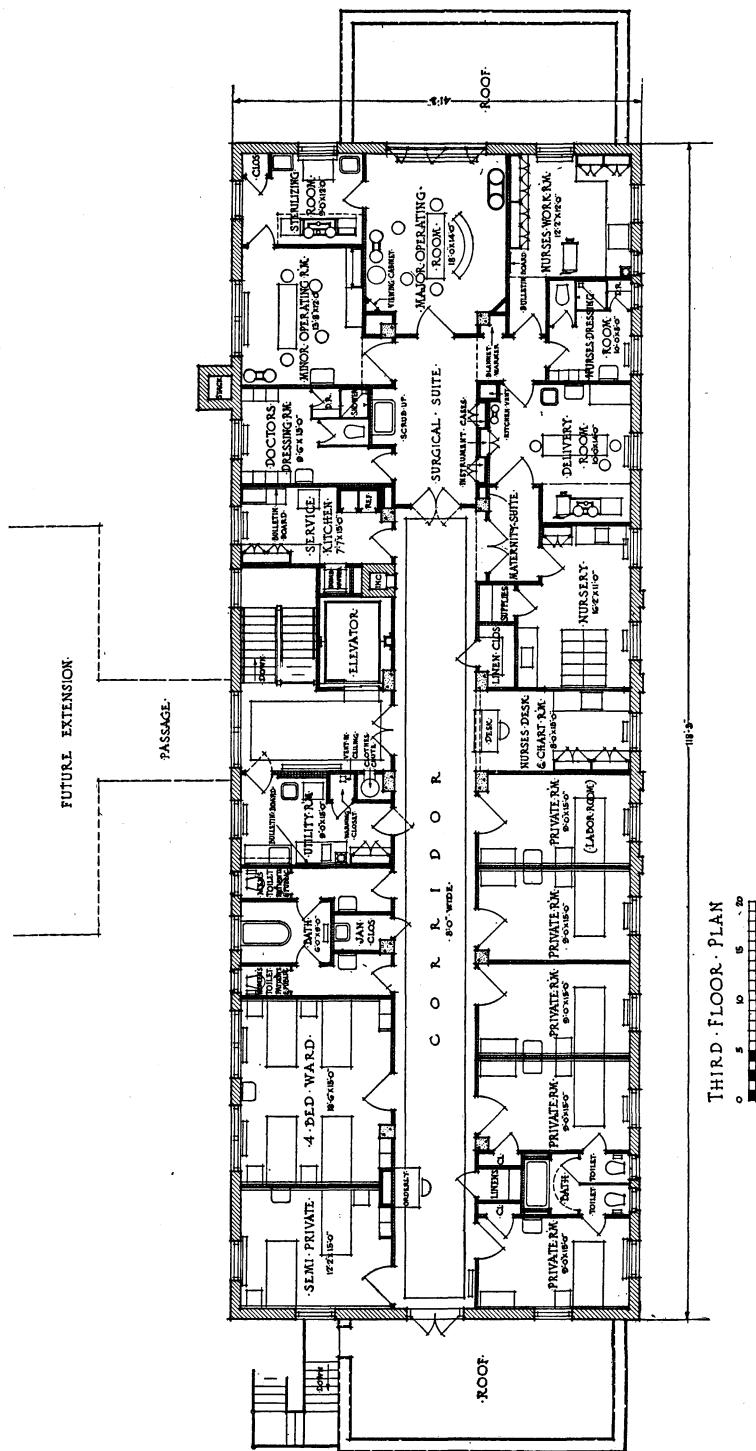


FIGURE 9.—The third floor would be used in each of the three hospitals—the 25-, the 35-, or the 46-bed—as it has the operating rooms, the maternity suite, and other facilities.

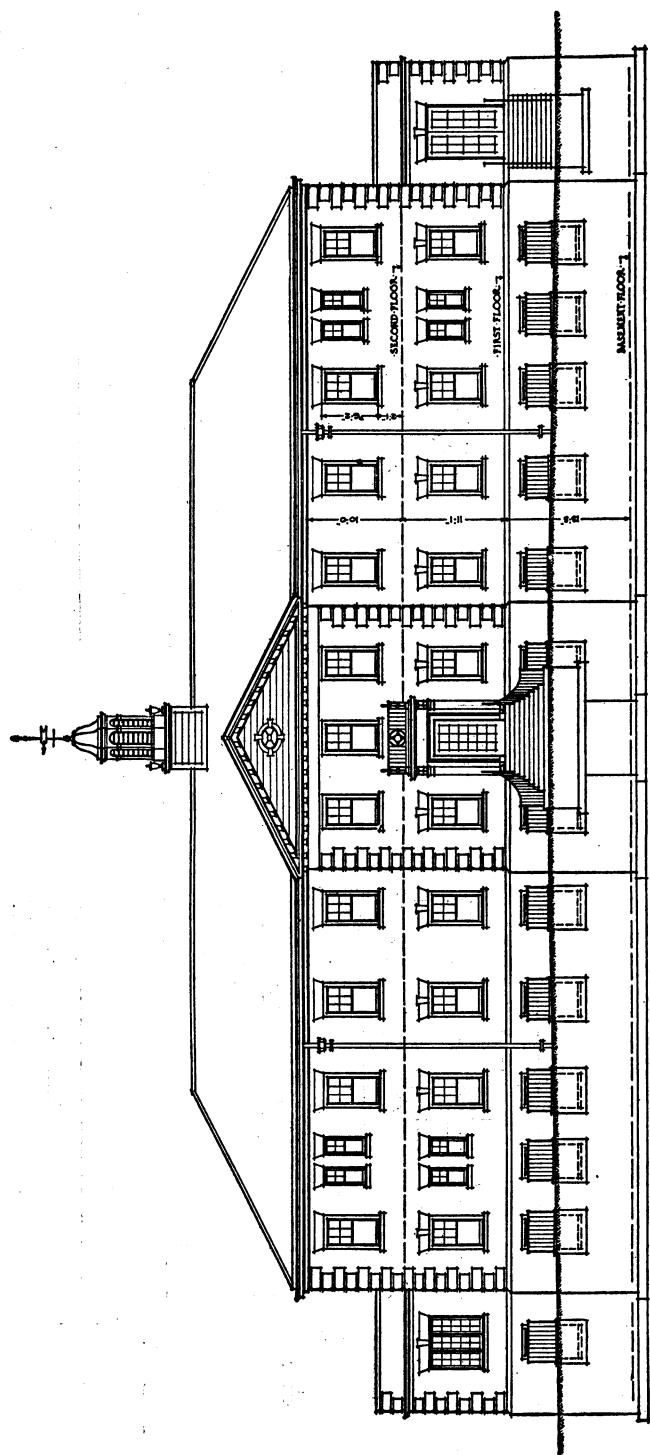


FIGURE 10.—A suggested elevation for the 25-bed hospital (figs. 6, 7, and 9). A rectangular plan, as the one shown, permits many variations in exteriors.

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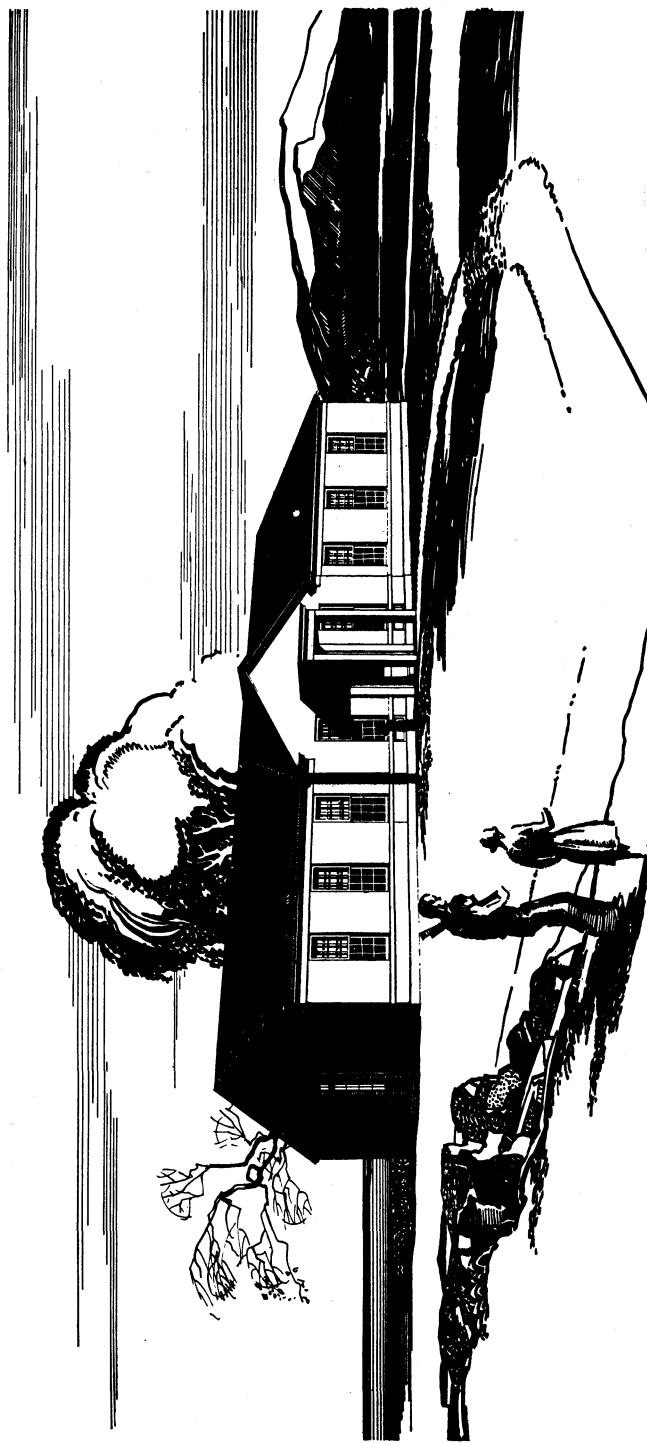


FIGURE 11.—Proposed front view of a 10-bed hospital that may be enlarged to 20 beds (fig. 12). (By courtesy of Carl A. Erikson. Schmidt, Garden & Erikson, architects.)

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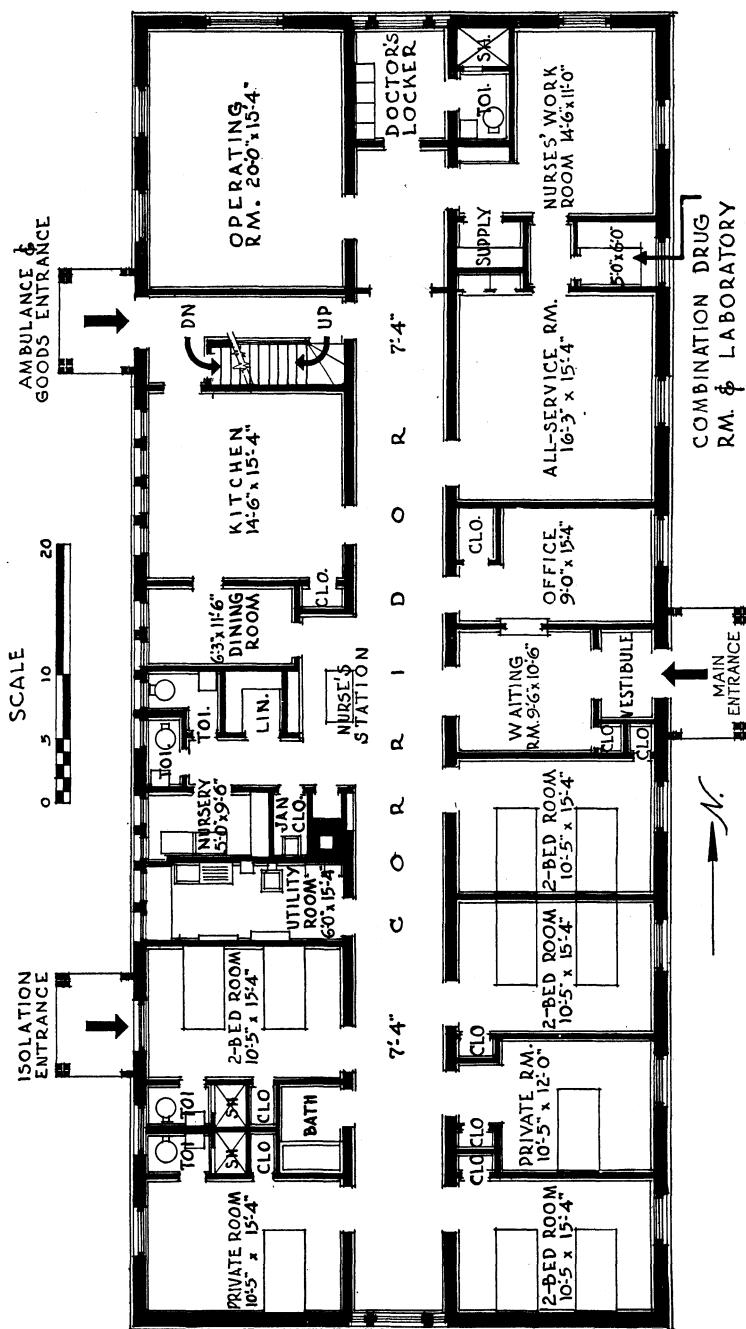
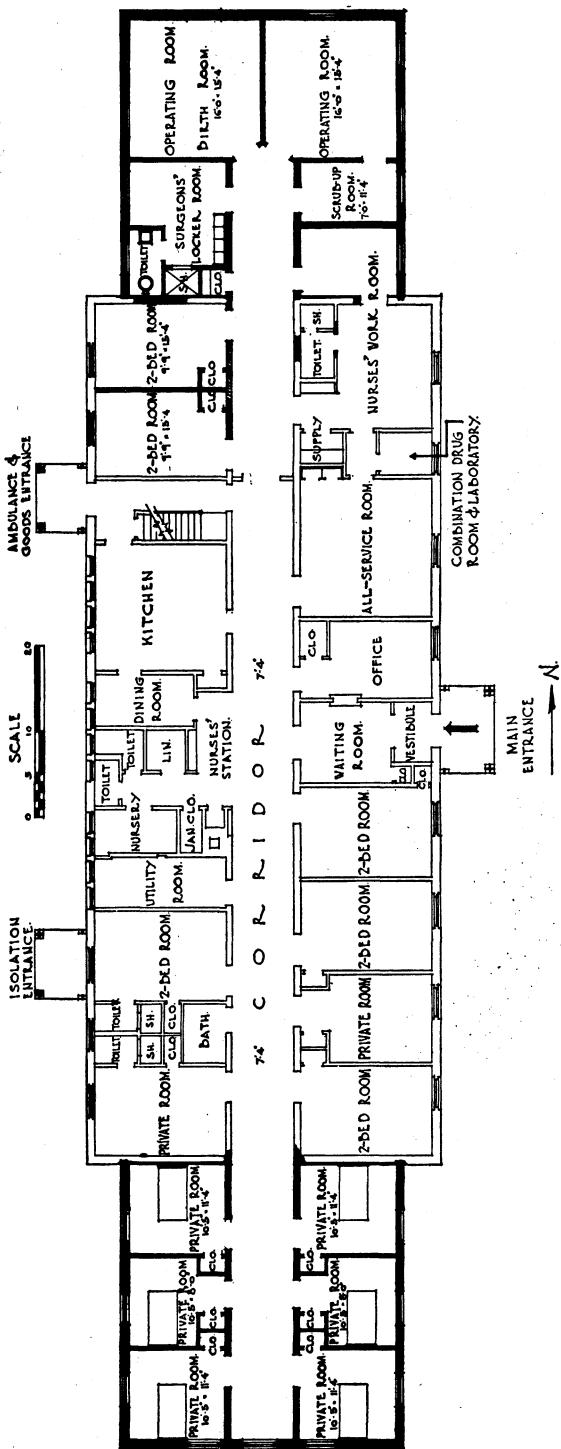


FIGURE 12.—Plan for the 10-bed hospital in figure 11. The hospital may be enlarged to 20 beds. This may be a good start for a small country community in which families are scattered. (By courtesy of Carl A. Erikson. Schmidt, Garden & Erikson, architects.)



FIGURE 13.—The 10-bed hospital can be easily extended to 20 beds without changing the lines of the original unit (figs. 11 and 12).

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**FIGURE 14.**—An economical method of adding 10 more beds to a 10-bed hospital (figs. 11 and 12). Some of the rooms serve two purposes, but there is an operating room and a birth room. (By courtesy of Carl A. Erikson. Schmidt, Garden & Erikson, architects.)

## HOSPITALS FOR RURAL COMMUNITIES

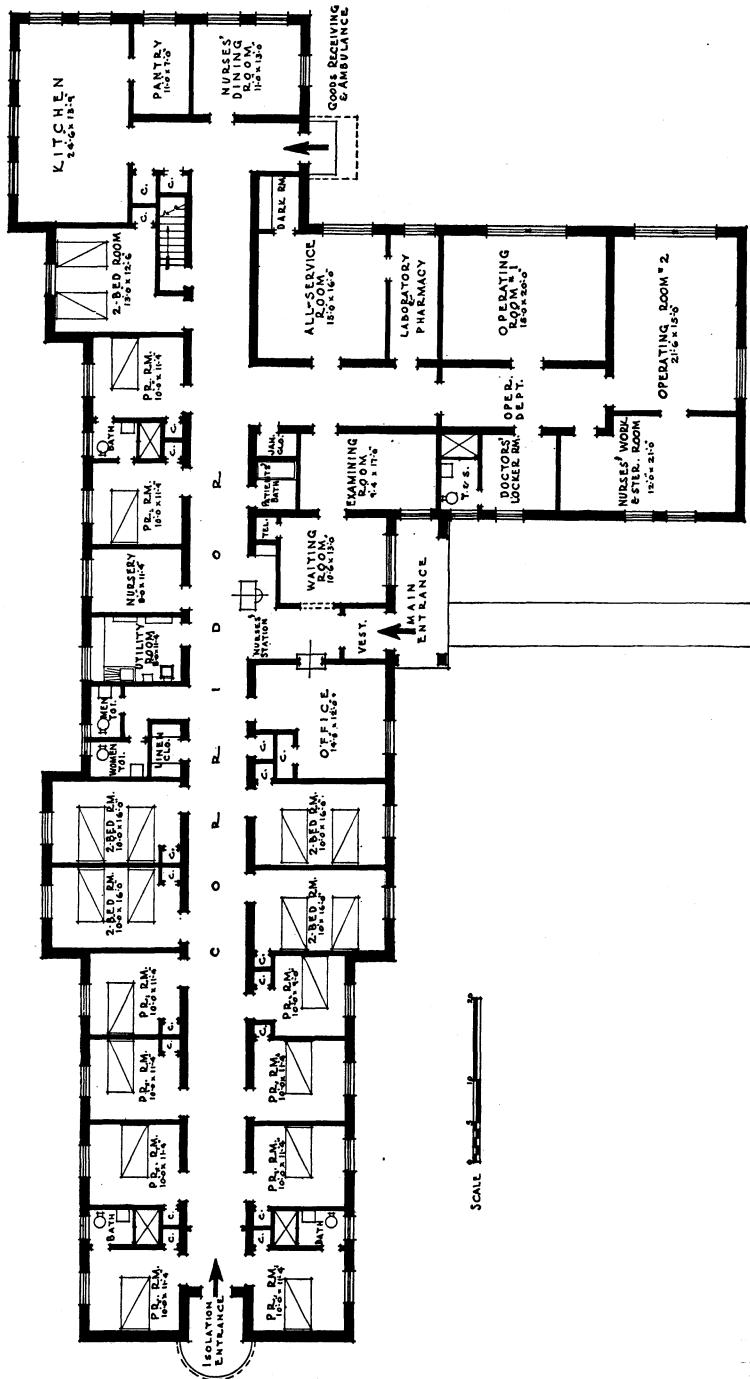


FIGURE 15.—Floor plan of 20-bed hospital which may be easily enlarged to 40 beds. See cover. (By courtesy of Carl A. Erikson, Schmidt, Garden & Erikson, architects.) BAE-30770E

or clinical classification can be housed in any of them. In any of these plans not less than 2 rooms are shown with private shower and toilet. They serve a double purpose—to provide superior accommodations to those who can afford them and to serve as isolation rooms for contagious diseases. In the rare conflicts between these purposes, the contagious disease takes precedence. (These rooms may have outside entrances, if desired, to permit caring for the patient from the outside.)

The "All-Service Room" (figs. 11 and 12) is primarily intended for X-ray needs and for out-patients' examinations. The X-ray needs a dark room and that is combined with a laboratory and a pharmacy in the "combination room." When this hospital is expanded to its maximum of 20 beds (figs. 13 and 14) an additional operating or birth room is suggested. For the hospital that starts at 20 beds (fig. 15) with a possibility of growth to 40 beds, we suggest 5 rooms to take the place of the 3 shown in the 10-bed hospital plan.

In the 10-bed hospital the operating room is not less than 15 feet 4 inches by 20 feet—large enough to permit the most careful surgical technique. The all-service room is large enough to permit the installation of all necessary equipment and yet leave suitable working areas around the equipment being used at the moment.

The similarity of facilities needed for developing X-ray films, laboratory, and the pharmacy makes this combination very simple.

But adequate care of the sick requires more than the medical services already outlined. The generally accepted minimum standards of the patients' rooms of not less than 80 square feet and a content of 800 cubic feet for each patient have been met. Accessories, such as closets for clothes, linen and cleaning gear are shown. A utility room for nursing procedures, bathroom, a nurses' work room for preparation and sterilization of materials adjoins the operating room, as do the locker and toilet for the surgeons. A single kitchen provides the diet for both patients and personnel—for the latter a dining room is provided.

The single office controls the entrance way and adjoins the nurses' station, permitting easy control without difficulty or duplication of personnel.

It is assumed in all plans that about one-half of the basement would be excavated to house heating plant, store rooms, morgue, possibly a laundry, etc.

In the attic the necessary personnel (nursing and other) might be housed. To do so increases the costs somewhat and is never wholly satisfactory, yet in many cases it may be necessary.

From a hard, practical standpoint such small hospitals as these must not only be economical to build, but inexpensive to operate. If they are not, the cost of operation may be beyond the community reserves. Such hospitals do permit of low cost operation of a high grade service.

#### ORGANIZATION AND ADMINISTRATION<sup>2</sup>

Small hospitals will vary somewhat in organization and administration with the character of the community that the hospital is to serve and the type of work it expects to do. The fundamental principles of good organization and management are the same for all hospitals, but their application varies with size, location, and functions of the particular institution.

Most families who need hospital care must go to nonprofit general hospitals—governmental or voluntary—as very few of these institutions for general care are controlled by profit groups. The nonprofit general hospital is usually organized in one of the following ways: (1) Under a general State law; (2) under a special legislative act; or (3) under a charter provided for by State law.

Most States have general laws that permit cities and counties to build and operate hospitals. This general law usually provides for the holding of an election to vote on a bond issue, the issuance and

<sup>2</sup>For detailed information on the organization and management of the small general hospital, see the *Small General Hospital—Organization and Management*, the Duke Endowment, 1934.

sale of bonds, and the levying of a tax to pay off the bonds, the organization of a board of trustees, the election of officers to manage the institution, and the jurisdiction of the authorities of the community in which the hospital is to be located.

If there is no general law that permits hospital organization or if the general law does not meet a community's situation, a county, or a municipality, or a group of citizens usually may request a special legislative act that will provide for the establishment of a hospital.

The voluntary hospital usually is organized by a group of citizens in the community which represents the interests of the locality. This group applies for a charter or a certificate of incorporation. This charter or certificate of incorporation is considered the constitution of the incorporators, and these incorporators usually become the board of trustees of the hospital. This board of trustees frequently consists of nine members, and in some hospitals a part of this board becomes the board of directors or the executive committee, which is directly responsible for the hospital as administered by the superintendent. Hospitals differ somewhat as to the types of set-up.

The direct management of the hospital is controlled by a superintendent, who in most places is appointed by the board. The superintendent's duty is to represent the board in all administrative affairs. A superintendent must have a wide range of knowledge, for there are varied problems—food problems, personnel problems, rates to be fixed, records to be kept—in addition to the medical and administrative aspects of management. Under the superintendent there is the regular nursing staff and the service personnel. In some hospitals, even in comparatively small ones, nurses' training schools are included. In 71 percent of the governmental hospitals in small communities the superintendent is a nurse.

The medical staff of the institution is a very important servicing body. This body usually is appointed by the board of trustees. In many hospitals any licensed physicians in good standing in the territory may be elected as members of the staff, and many authorities recommend these open-staff hospitals. The board has the power to remove any staff member or take away the privilege of the hospital from any doctor, if such action is for the good of the institution. This staff is responsible for the professional work of the hospital. In most places it reports at regular intervals to the board, through its chief of staff or medical committee.

One of the important duties of this medical staff is to keep up and improve the standard of the hospital. The Duke Endowment believes that the conferences held by this staff are of great value:

\* \* \* Without a hospital, physicians practice almost independently. They see their patients alone, in the private office, or in the home. With a hospital their practice is, to a certain extent, under the scrutiny and supervision of their profession. The doctor practicing medicine in a hospital where there is an efficient staff organization receives through the discussions of the staff, through the exchange of professional opinion, a great deal of information of far-reaching educational value in making him not only a better doctor for taking care of his patients in the hospital but for taking care of his patients throughout the entire community. In this respect, in its educational influence by improving the quality of practice of the physicians of the community, the hospital makes one of its largest, and not infrequently overlooked, contributions to the general welfare.

The Spartanburg General Hospital, at Spartanburg, S. C., is governed by nine trustees appointed by the governor upon the recommendation of the county legislative committee. The hospital superintendent is directly responsible to this board.

The Rowan Memorial Hospital at Salisbury, N. C., which serves a large population, is operated by a perpetuating board of nine trustees. A part of this board becomes the board of directors. The staff of doctors includes practically all of the doctors of Rowan County.

Randolph Hospital, located in Asheboro, Randolph County, N. C., is controlled by a corporation belonging to the people. The hospital is governed by a group of citizens of Randolph County, who were appointed by the State legislature. This body can organize itself. The hospital now has a board of directors consisting of nine persons which takes charge of the hospital through the superintendent. The institution is open to all doctors of the county. The chairman of the county board of commissioners, the county superintendent of education, the county superintendent of health, and the mayor of Asheboro are ex-officio members of the corporation. The staff members of Randolph Hospital consist of a superintendent and an assistant, seven graduate nurses, a colored graduate supervisor, a technician, a cook, a kitchen helper, and a janitor.

At the Ripon General Hospital in Ripon, Wis., an 18-bed institution, the staff includes a superintendent, a combination technician and X-ray operator, a sufficient number of nurses to take care of the beds occupied, office help, and the needed general service. All the local doctors in Ripon and the neighboring small towns are invited to join the staff.

The Huggins Hospital at Wolfeboro, N. H., a 35-bed institution, has a staff of 20 persons made up as follows: A superintendent, an assistant superintendent, eight graduate nurses, a technician, a housekeeper, a cook, a janitor, and six maids. The board of this hospital consists of 17 trustees, but an executive committee, consisting of 5 members and a chairman, is responsible for hospital affairs. The committee makes its contacts with the hospital through the superintendent.

The Marlboro County Hospital at Bennettsville, S. C., with 32 beds (p. 11), is managed by an executive committee of the board of trustees, but the direct management is controlled by the superintendent. All nurses are graduates, and the staff includes a dietitian, a laboratory and X-ray technician, a bookkeeper, and a historian-stenographer, in addition to doctors and nurses. There is also the general service staff.

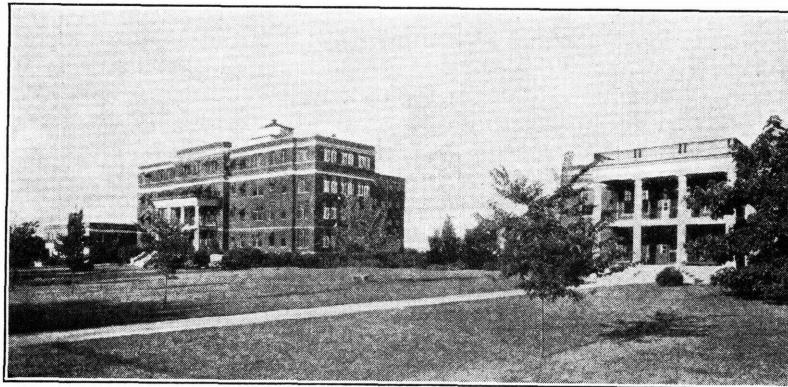
In certain counties the rural hospital is made the central location for the county health service, and this feature then becomes a consideration in organization and administration work. Michael M. Davis, an authority on hospitals, believes such an arrangement is important to the county. He says:

It is desirable that rural hospitals be intimately linked with the local public health services. It will frequently be the case that these areas have previously had no organized health departments. The study of an area in respect to the need and the location of a hospital might well be conducted by the same Federal and State agencies as are assisting in the organization of

rural health departments. The health officer of the locality may well have his headquarters in the hospital and be associated with it also in other capacities.

In the Spartanburg General Hospital (fig. 16), for example, the superintendent of the institution is also the director of the county health work, and the patients from country districts are referred to county health nurses for follow-up work. The hospital is the meeting place of the county medical association, the nurses association, and the county welfare association.

When the Southside Community Hospital was established at Farmville, Va., by the Commonwealth Fund, the hospital area included one whole county and parts of eight counties. At the time of organization few of these counties had set up public health work. The State



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FIGURE 16.—The Spartanburg General Hospital with the clinic at the left of the main building and the nurses' home at the right. This institution serves as the headquarters for county health work.

Health Department organized these nine counties, representing a population of 111,000 into a public health district with a health officer and an assistant in charge. This organization not only provided a means of carrying on public health work, but a method whereby a large rural territory could cooperate with a hospital.

#### THE CERTIFICATION OF HOSPITALS IMPROVES THEIR STANDARDS

Requirements for safe hospital practices, satisfactory equipment and facilities, and acceptable services have been of great value to communities. Certainly, an institution of medical practice, whose entire field of work is that of caring for sick people, should have such standards of operation that the citizens of a community can be assured of safe and good care.

Because of the importance of proper medical care in hospitals, the Council on Medical Education and Hospitals approves hospitals for the Hospital Register. No hospital that is known to have unsafe practices is included. Considerable investigation is carried on before any hospital is admitted to this register.

Standards are further improved by the American College of Surgeons. This organization has established a standardization

movement of hospitals to improve hospital techniques. Its minimum standard sets forth requirements for the care of the sick, which require each hospital to have an organized, competent, and ethical medical staff with doctors on the staff who are fully licensed to practice and in good standing. These standards require complete patient records and adequate diagnosis and therapeutic facilities, including a clinical laboratory and X-ray department. The acceptance of the minimum standard of the American College of Surgeons is entirely voluntary with the hospital. Such standardization should lessen risk and provide safer and better care for the people.

#### MEDICAL CENTERS FOR SPARSELY POPULATED RURAL AREAS

What is to be done about the country districts where families live far apart, or those districts in which families live in almost inaccessible locations that make prompt medical attention impossible to obtain? What about the many scattered families that not only live far apart and far away from towns but have incomes too low to afford needed hospital care? They may also live in counties in which taxable wealth is too small to supply hospital care to low-income people. Such a hospital problem becomes not only a problem of inaccessibility to hospitals, but one of inability of the family or even of the county to pay. Many localities are today faced with these difficulties.

According to medical authorities, illness occurs as often among low-income as among high-income groups, or more often. Sickness bills are smaller among low-income families who do not have adequate free facilities not because the families do not need care but because they cannot afford care. Health studies and health surveys in low-income sections, together with the analysis of the cost of medical care, show the impossibility of many families, or of even the political unit in which these families live, to pay illness costs.

With low income and high transportation costs, and the difficulties of establishing well-serviced hospitals in sparsely settled areas and because of high operation costs and inability to get good medical service, the problem seems to mean either (1) moving the families into locations where their incomes may be increased and into localities that are sufficiently well populated and prosperous to warrant a hospital and to pay the costs of building and running it, or (2) finding some method of financing an adequate hospital other than by family, county, or even State support. Even with this supplementary financing, some movement of population appears to be necessary; otherwise some families would always be too far away.

As illness does not wait, some means of care should be considered until more permanent means are available, and the small medical center or health center for the sparsely populated area has been recommended to provide for immediate hospital care until a distant hospital may be reached or services are brought to the center. Such a center is sometimes called a cottage hospital.

Usually authorities recommend that these centers have a few beds for emergency cases, that they have X-ray and laboratory equipment, an examining room, and doctor's office. The necessary number of nurses obviously would depend on the number of patients. A doctor

on call is recommended, and the necessary general housekeeping services. The center should have arrangements with the nearest satisfactory hospital for the transfer of patients. Good ambulance service is very important. Many authorities believe that 50 miles over good roads is not too far for ambulance service for most cases. Others believe a distance of not over 40 miles is preferable.

#### THE VALUE OF THE HOSPITAL TO THE RURAL COMMUNITY

A good rural hospital does more than provide for those in the community who actually need hospital care. If it is well equipped and well organized it may attract physicians to the country district where it is located, and it also may be the means of encouraging the doctors in the locality to stay in country practice. It enables these country doctors to see more patients and do better work. Its laboratories and facilities can be used for the diagnosis and treatment of all the people. It may become the center of the entire county-health program.

If properly run, it gives families a better understanding of medical care, for most people in the community will have known someone who has been there or they will have assisted in some kind of voluntary service for it. Citizens who have helped in raising funds for it, who have watched its building and development, who have been patients in it, learn to know it intimately, and they profit through its educational information. The people have confidence in it, and it becomes an outstanding, necessary civic project, and a significant social institution.

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